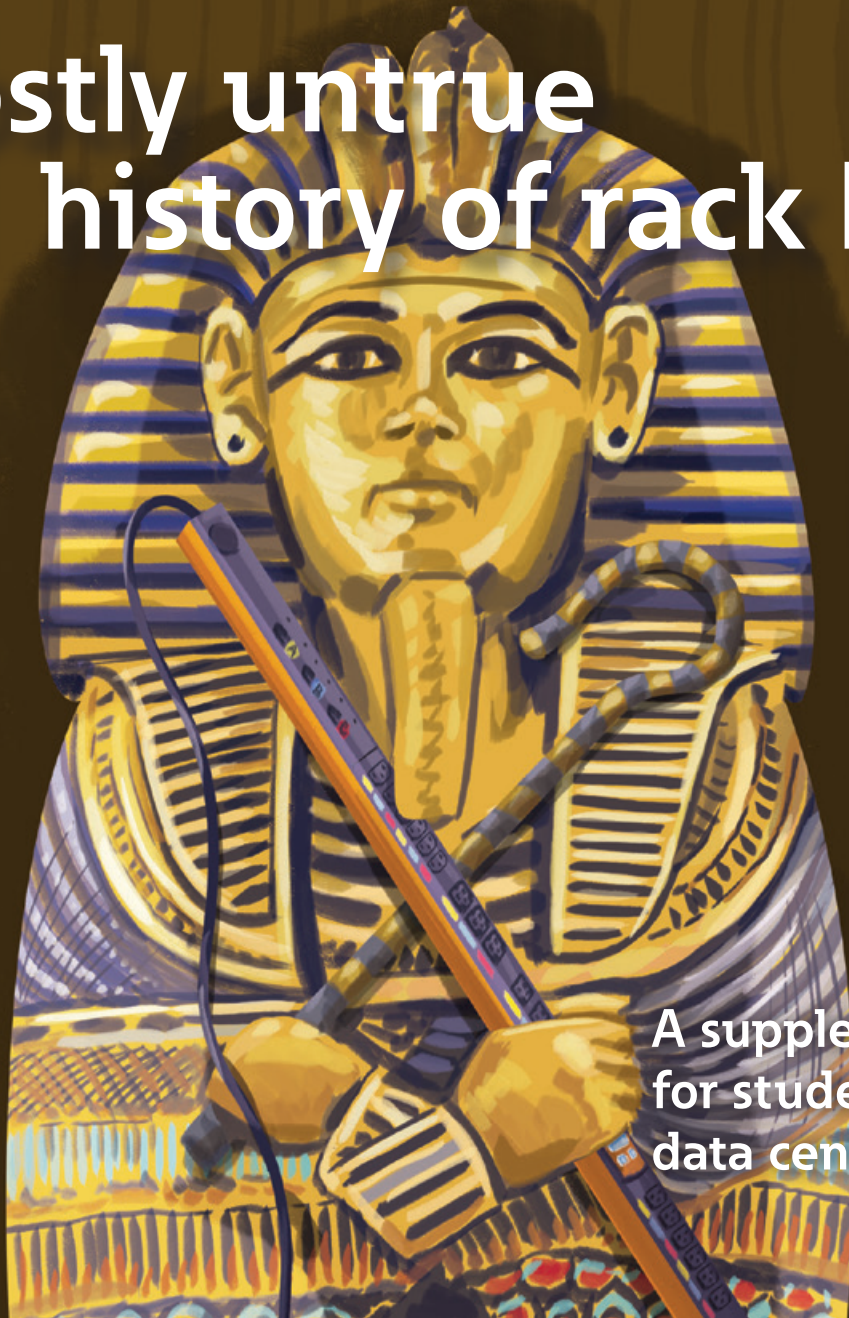


A mostly untrue history of rack PDUs



A supplemental textbook
for students aspiring to
data center and IT careers



History books that contain no lies are extremely dull.

— Anatole France, French poet

Although rack power distribution units (PDUs) are typically thought of as modern innovations that are found everywhere from network closets to the world's largest data centers, they've been used throughout the centuries in all kinds of unique ways. Join us for what we hope is an entertaining walk through the history of rack PDUs.

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To view this book online, please visit

Eaton.com/PDUhistory



One of us is hidden on each page.
Can you find us?



**Salisbury Plain in
Wiltshire, England
1200 B.C. (Bronze Age)**

Thok, the brother of Thag Simmons, is widely credited with developing the first rack PDU. Primarily made of wild boar tusks, Thok's homelab was configured for primitive monitoring of the night sky. However, Thok was unable to establish a reliable connection with Stonehenge, the world's first token ring IT network. Had r/homelab existed, he could have asked for advice on network connections for rack PDUs from fellow homelabbers, but this subreddit wasn't created until 2012.

**Athens, Greece
668 B.C.**

While competing on the second day of the pentathlon, a Greek athlete named Theron broke his only javelin on his first throw. In the name of Ares, Theron grabbed a PDU from the local data center. Unlike modern-day PDUs made of lightweight aluminum for easy installation and operation at high temperatures, this ancient Greek PDU was made of the same heavy bronze as Corinthian helmets. Theron's second and third javelin throws did not travel far. Theron was later disqualified from the pentathlon and kicked out of the remaining events.





**Alise-Sainte-Reine, France
52 B.C.**

In one of the most critical sieges in the history of the Roman Empire, Roman forces commanded by Julius Caesar surrounded Gallic forces in the hilltop town of Alesia. Short on lumber, the Romans stole rack PDUs from local Gallic server rooms to construct catapults and cut off Gallic network access. The united Gallic tribes led by Vercingetorix of the Arverni could not withstand the Roman siege and were defeated. The Battle of Alesia marked the end of Gallic independence in the territory of modern-day France and Belgium.

Alexandria, Egypt 44 B.C.

Often overlooked by historians, data centers were the critical component in the longevity of ancient Egyptian dynasties. The pharaohs understood the importance of data center managers and accorded them with elaborate burials. The Ptolemaic was the last dynasty of ancient Egypt, and its data centers were managed by Asim, a close confidant of Cleopatra VII. Although the tomb of Cleopatra VII has never been discovered, Asim was uncovered holding his favorite rack PDU equipped with what archaeologists believe to be the first IEC outlet grips used to securely connect power cords to rack PDUs.





Modern-day Shimonoseki, Japan
1185 A.D.

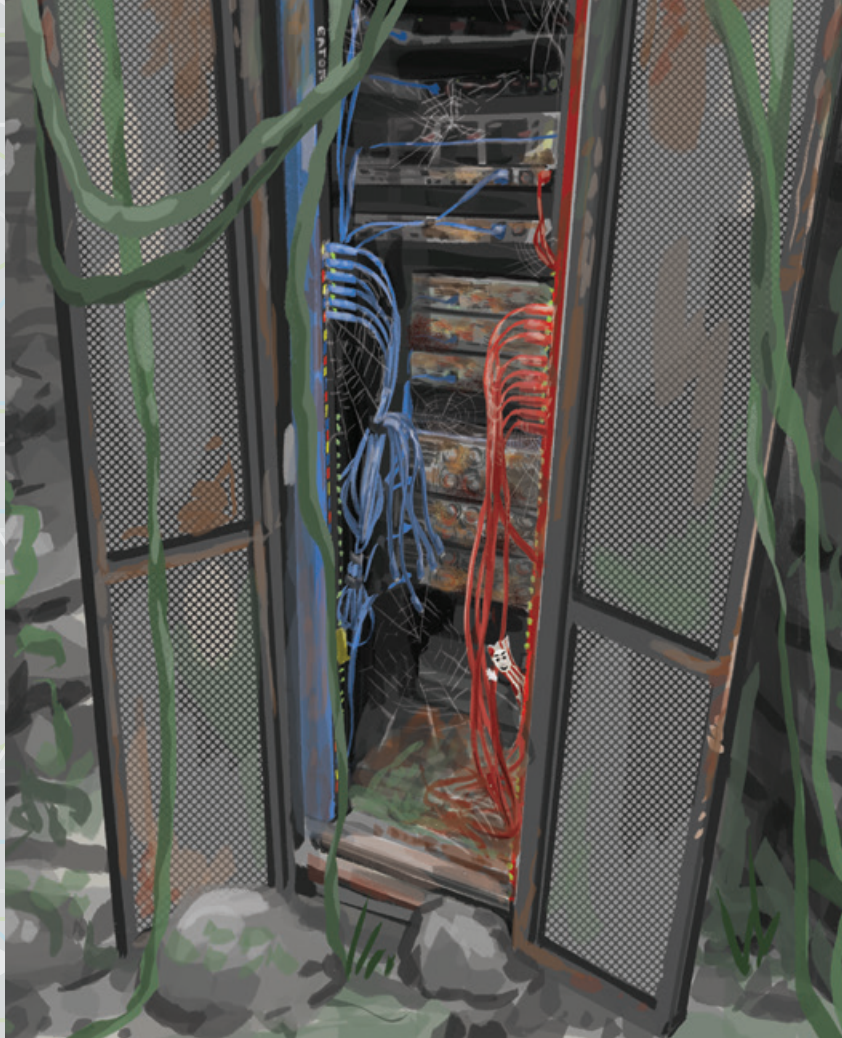
The powerful Minamoto clan used half-height rack PDUs to train their youngest Samurai warriors. The lightweight aluminum material of their rack PDUs was ideal for trainees unaccustomed to wielding heavier weapons. An array of PDU colors marked the trainees from basic to advanced and inspired the modern-day system of karate belts. Many military historians believe this unique training approach was the key to the Minamoto defeat of the rival Taira clan in the sea battle of Don-no-Ura.

Caerlaverock Castle (Southern coast of Scotland)

1297

With rumors of English forces gathering to attack Caerlaverock Castle, Sir Eustace de Maxwell decreed that all knights participating in the annual jousting contest use rack PDUs sourced from the Cave of Caerbannog in place of their normal lances to preserve their weapons supply. The rack PDUs were painted to match each knights' coat of arms. Local IT pros were inspired to paint their rack PDUs to help them quickly identify A and B power feeds in their rack enclosures.





Machu Picchu, Peru 1448

Archaeologists were surprised to discover very advanced IT systems in the Incan ruins of Machu Picchu. Not only were the rack PDUs color coded, they also had matching power cords from Tripp Lite by Eaton. Through advanced IT forensics, experts were able to export data logs and determine that the IT pros of Machu Picchu used alternating phase outlets on their PDUs to make visual load balancing easier and reduce cord clutter.

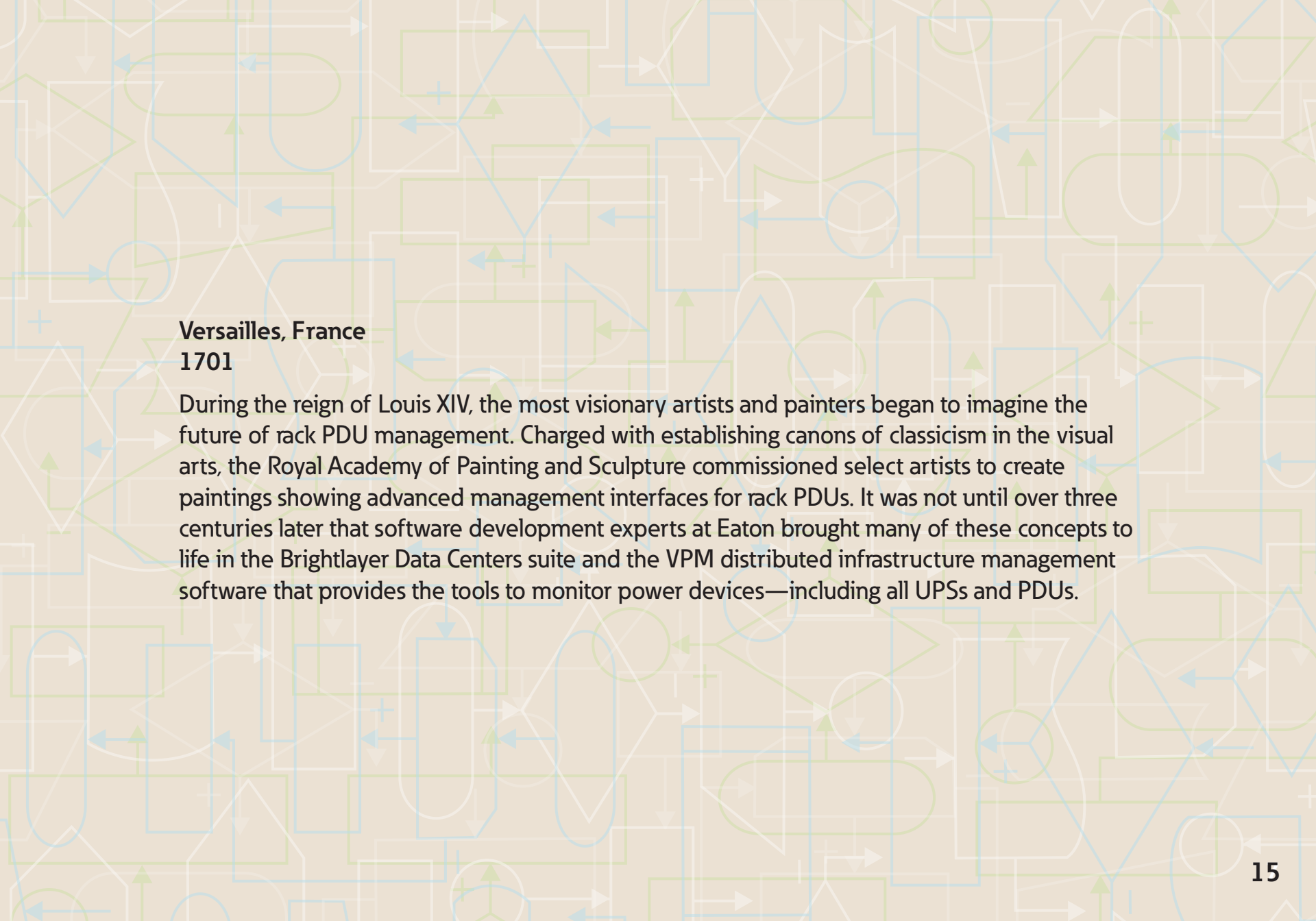
How did such an advanced civilization disappear? Recent theories suggest that a DNS problem was the root cause.



Venice, Italy 1654

During the height of gondola popularity, thousands of gondoliers cruised through the waters of Venice, transporting families, Instagram influencers, lovers and merchants. Although business was booming, gondoliers often had to scramble to deal with persistent supply chain issues. With a shortage of oars, they turned to using rack PDUs from a recently decommissioned data center to help propel their gondolas. One fortunate outcome of this unusual use of rack PDUs was that clever gondoliers were able to configure their new oars to monitor their physical power consumption. Centuries later, Eaton refined this capability to monitor power consumption within $\pm 1\%$ for billing-grade accuracy at the outlet level.





Versailles, France
1701

During the reign of Louis XIV, the most visionary artists and painters began to imagine the future of rack PDU management. Charged with establishing canons of classicism in the visual arts, the Royal Academy of Painting and Sculpture commissioned select artists to create paintings showing advanced management interfaces for rack PDUs. It was not until over three centuries later that software development experts at Eaton brought many of these concepts to life in the Brightlayer Data Centers suite and the VPM distributed infrastructure management software that provides the tools to monitor power devices—including all UPSs and PDUs.

Boston, Massachusetts

1775

The full story of Paul Revere's midnight ride on April 18, 1775 began weeks earlier when agents of the American Revolution smuggled the Tripp Lite by Eaton "pocket PDU" past British lines and installed it in the Old North Church in Boston. Once the PDU was in place, it was a simple matter of using the switched outlet functionality to illuminate the two lanterns in the steeple to alert the American colonial militia that the British forces would be crossing the Charles River in advance of the battles of Lexington and Concord.





Montana Territory

1864

While there have been extensive historical accounts of the Indian tribes of Montana, little attention has been given to their sophisticated system of mobile data center tipis. Now considered the first true edge computing application, these data center tipis typically consisted of buffalo hide fastened around seven to 10 rack PDUs. Women were in charge of all tipis, and they developed a PUE standard of having data center tipi doors face west to keep morning temperatures cooler. They also reduced cooling costs by leveraging PDUs that could operate at temperatures up to 140°F (60°C).

Forests of Karelian Isthmus, Finland 1939

In 1939, the Soviet Red Army invaded Finland with an overwhelming military force. Instead of rolling right through Finland, they suffered massive losses in The Winter War. Using white rack PDUs as poles and skis, Finnish troops blended in with the snow and inflicted heavy losses on the Russian infantry and tanks.





**Isla Nublar, Costa Rica
1993**

If Dennis had used a managed PDU, he could have turned utility power off and on at the outlet level. Taking advantage of this outlet switching capability, he could have averted disaster and Jurassic Park would still be open today. Ah ah ah ... No magic word needed.



Austin, Texas 2014

At the Spiceworks annual event for IT pros, the Eaton team made a splash when they dressed as Ghostbusters equipped with UPS-PDU proton packs. The Eaton Ghostbusters did not cross their streams, and they also demonstrated how to daisy chain up to eight PDUs under a single IP address to reduce infrastructure costs by 875%.



Raleigh, North Carolina 2016

Deep within the capital city of North Carolina, Eaton forged the ultimate rack PDU throne with a local artist. The throne is now coveted by data center managers around the world. There are rumors that you can find the throne in the Eaton rack PDU selector (Eaton.com/RackPDUSelector) if you look closely.

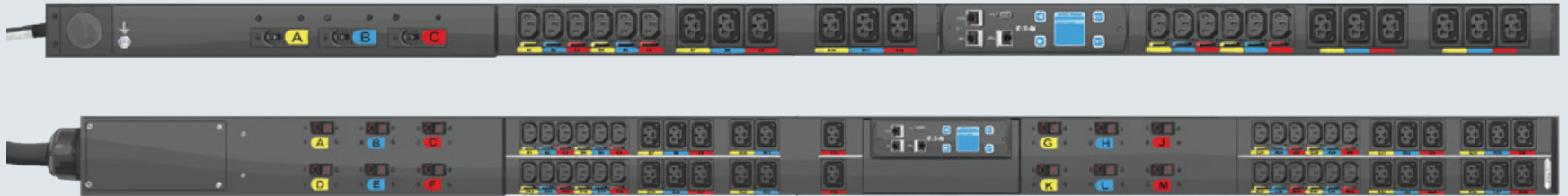


Seafloor near Scotland's Orkney Islands 2018

Microsoft created Project Natick to understand the benefits and challenges of subsea data centers. One key component of this experimental data center was the use of custom rack PDUs equipped with remotely controlled circuit breakers. As a result, operators could shut off or trip any of the circuit breakers from a remote location without needing to send divers to the data center to reset them manually.

Eaton High Density rack PDU

Centuries upon centuries of rack PDU inventions and improvements have led up to the Eaton High Density rack PDU. Here's a closer look:



Save time

Configure the cord entry position and cord length for a seamless box-to-rack transition. Combined with G3's standard tool-less mounting system, you can install your PDUs without any tool fumbling or cord wrestling.

Save money

High density means more outlets in the same space and fewer PDUs to support your equipment's power needs. Configure up to 54 outlets per PDU including the new C39 outlet for future proofing your deployments.

Reduce risk

Easily identify where power is coming from and where it is going to with configurable color chassis and alternating phase outlets. When it is that easy to distinguish between A and B power feeds, losing power to your IT equipment or overloading a phase is less of a risk.

To learn about the High Density rack PDU, visit [Eaton.com/HD](https://www.eaton.com/HD)



Configurable inputs

Configurable options are available for input plug, input cord length and cord entry position

New C39 outlets

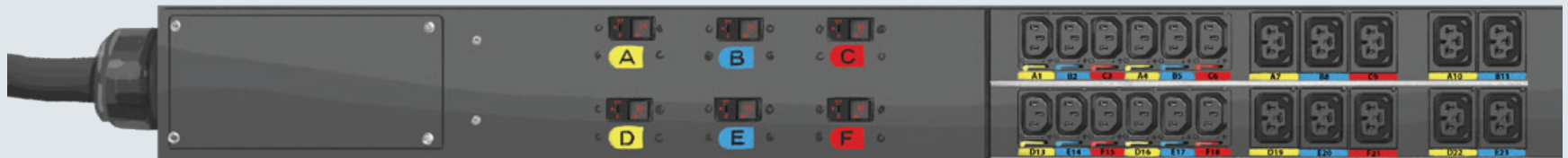
Standardize distribution with the C39 outlet, which accepts both C14 and C20 input plug types

Configurable, low-profile circuit protection

Choose between circuit breaker and fuse disconnect in a low-profile format that won't interfere with airflow

IEC/NEMA outlet module configurations

Mix and match IEC and NEMA outlets across configurable outlet modules to pack up to 54 outlets in 42U rack enclosure



IEC outlet grips

Eaton's patented IEC outlet grips secure plugs in place with a lever-actuated grip that's integrated into each outlet

Two technology types

Monitor and measure critical power quality factors such as voltage, current and power consumption.

1

Metered Outlet PDUs help conserve energy with Level 3 power usage effectiveness making them ideal for optimizing data center performance.

2

Managed PDUs offer the same power quality measurement and monitoring capabilities as Metered Outlet PDUs, but also have per-outlet switching control.

Alternating phase outlets

Make visual load balancing easier and minimize the need for longer cord lengths with alternating phases outlet-by-outlet

Remote outlet switching (Managed PDUs only)

Turn on or off individual outlets to remotely power cycle equipment



Communications ports

Eaton's patented daisy chain feature allows up to eight HD PDUs to share the same network connection and IP address

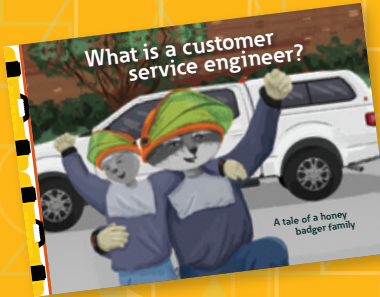


Eleven chassis colors available

Configure the color of your HD PDU chassis to easily identify A/B power feeds



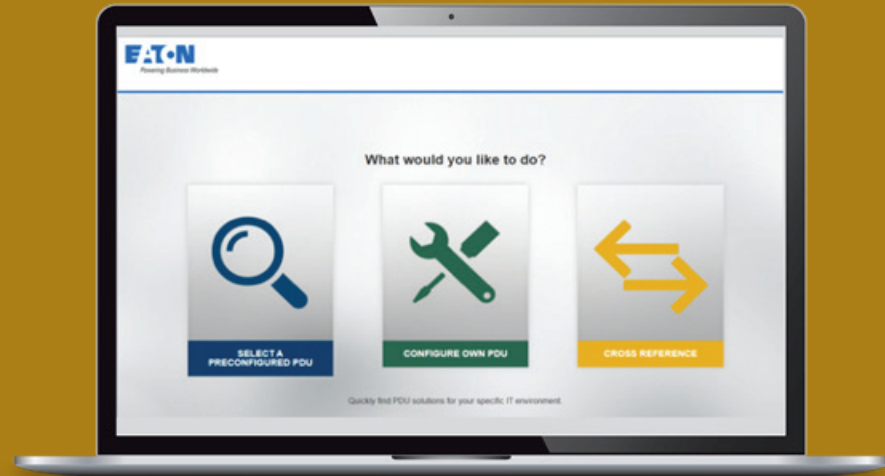
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tool and make your own
(PDU) history!



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