

# Visible Light Communication (VLC): A New Way of Looking at Data Center Power



A Vertiv Application Brief

## Upgradeable with a New Twist:

Visible Light Communication (VLC) is embedded technology that is present on GU rPDUs, metered and above

## Power for Change:

New choices on how you monitor Data Center rack power, with new security features — reduce costs without reducing functionality

## Vertiv™ Geist™ Brings the Power of the Smartphone to Geist Upgradeable (GU) rPDUs

Power monitoring within a data center is a fundamental requirement; it is a key metric essential to understanding the operation of the data center whitespace. In-rack power monitoring is vital at the rPDU level and throughout the distribution chain. This data is essential for facility teams to ensure uptime, for IT teams to plan and receive alerts and for colocation customers to monitor energy consumption.

To date, mainstream rPDUs have typically offered two primary methods for achieving monitoring capabilities:

1. Basic local meter
2. Network enabled smart meter

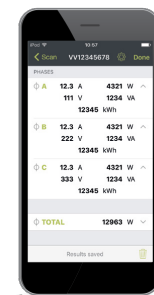
Geist has taken the power of the smartphone, its unique ability to add functionality and capability inherently not present in a product, and paired it with our GU series of products. The result is the patent pending Vertiv rPDU Scanner.



## Understanding VLC



The GU LED encodes the power data into a proprietary data stream



The Vertiv rPDU Scanner app utilizes optical character recognition (OCR) technology to read and decode the data stream in real-time

- No configuration or pairing required
- Enables the “smart work” to be performed by the smartphone

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The Vertiv™ Geist™ VLC technology allows the rPDU to encode and transmit power data via the LED display which, in turn, is captured by the Vertiv™ rPDU Scanner app, via a smartphone camera using optical character recognition. The invisible becomes visible by leveraging the capabilities of modern smartphones without any additional management or security overhead associated with using wireless standards such as WiFi or Bluetooth.

Regardless of the rPDU's electrical configuration, there are many critical data points a user will want to view. The compact rPDU display can sometimes be difficult to view, and it can also be time consuming and tedious to record rPDU data manually via pen and paper. Even if the information is recorded correctly on paper, there are limitations and risks associated with accurately moving it back to a digital domain where it can be logged and monitored.

The Vertiv rPDU Scanner, powered by smartphone technology, enables fast capture of power monitoring data, so it can be easily viewed, logged and uploaded to external monitoring software for reporting and billing.

## Application: How Do I Use VLC in My Data Center?

There are a number of ways VLC improves data center workflows and efficiencies. Below are the three most common use scenarios.

### 1. Implement VLC for Installing, Commissioning and Maintenance of Vertiv Geist Devices

When adding new Geist technology to the data center, VLC allows the installer and/or commissioning staff to inspect the unit's operational condition without having to configure the unit or gain access via a network that might be restricted. VLC gathers the unit's internal activity and compiles data from thousands of units into a report that documents the successful installation, verifying that each device is active and performing as specified.

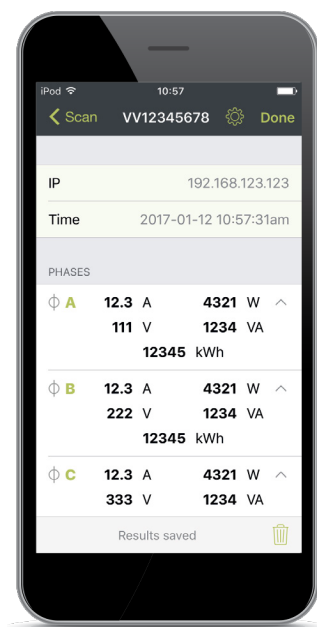
Beyond the initial installation, data center personnel can use data gathered through VLC to ensure proper load balancing, understand capacity percentages and use the data to create reports to analyze changes in power consumption.

### 2. Use VLC Via Your Smartphone to Eliminate Sneaker Reports

It is not uncommon for data centers to resort to manual data collection of power data, especially when the rack PDUs are not connected to the network and only have a local meter to show power data. Even when using Vertiv™ Geist™ Metered rPDUs, which are not connected to the network for data management, data center personnel can use the VLC feature to gather data from each rPDU.

When completing a sneaker report, the employee(s) will visually check and collect the rPDU values using pen and paper. This data will then require manual entry into a software layer (e.g., spreadsheet) for data processing. VLC removes the need for data entry as well as the human error associated with recording values and entering those values into a database. Where there were originally two opportunities for human error, there are now none.

Ensuring accurate data is collected from rPDUs at the rack level is critical for making informed business decisions regarding capacity planning for power, space and cooling. Too often, values are recorded inaccurately, decreasing the validity and value of reports that are generated using that data. Any rework that must be subsequently completed is both costly and inefficient.

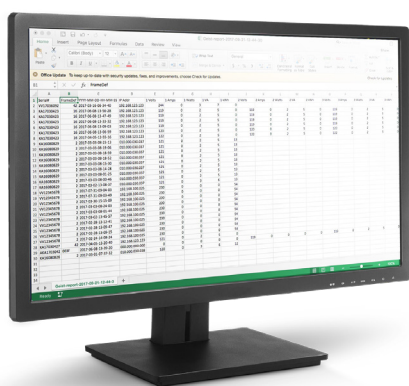


### 3. Improve Communication Across Departments

Multiple teams can use VLC without having to share network access or VLC scanning devices. Each team may be interested in a specific data set within the Vertiv™ Geist™ GU rPDU and a specific set of physical units (based on location, supply phase, cabinet, etc). Each team can have their own VLC application which they can configure to read specific rPDUs and then process their individual reports.

In some scenarios, different groups have varying access credentials and VLC can be used to provide data to each. Due to VLC's ability to be spread across multiple mobile devices, it is easy for multiple teams to interact with multiple rPDUs without having to compromise security, share resources or have independent software systems to achieve their goals. For example, within the data center space, the IT group owns the rack space and the facilities group owns the power. The facilities team members may not be able to gain access to the networked rPDU and as such cannot obtain their own power usage data. With VLC, each facilities user can obtain critical power data, regardless of network credentials.

Also, in colocation facility applications, the data center manager doesn't need to have network access to see the status of each of the rPDUs in certain leased spaced. The customer may have 100% of the network access, preventing the colocation staff from viewing the power usage. With VLC, the staff can maintain complete visibility of the electrical status and power usage.



### What VLC is not:

VLC is not a replacement to networked rPDUs, by nature it is a data gathering solution and cannot provide continuous feedback for real-time alarms or alerts and the monitored activity of a given rPDU is only as recent as its last VLC scan.

### Summary

Vertiv™ Geist™ VLC technology makes gathering, reporting and storing rPDU data easier than ever before. While it's not a replacement to networked rPDUs, it does bridge the gap between manual data gathering methods and the software layer. VLC and the Vertiv™ rPDU Scanner make installing, commissioning and maintaining GU rPDUs quick and efficient. It also reduces sneaker reports and the potential human error associated with pen and paper data collection—all while improving cross-departmental data sharing. VLC enhances uptime by increasing the ability for advanced power monitoring.



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