Modern servers, like the ML30 Gen11, tend to be more power-efficient despite their higher performance capabilities, due to advances in technology.

**HP ProLiant ML30 Gen11**

* **Processor:** The ML30 Gen11 uses the latest Intel Xeon E-2300 series processors, which are designed to be power-efficient while delivering high performance. These processors typically have a TDP (Thermal Design Power) in the range of 65W to 95W.
* **Memory:** Uses DDR4 ECC UDIMM memory, which is more power-efficient compared to older DDR3 memory.
* **Power Supply:** Comes with modern, energy-efficient power supplies that often have higher efficiency ratings (such as 80 PLUS Platinum or Gold).
* **Idle and Peak Power Consumption:** Modern servers usually have better power management features, allowing them to consume less power when idle. Peak power consumption will depend on the specific configuration (number of drives, expansion cards, etc.), but generally, a well-configured ML30 Gen11 might have an average power consumption of around 50W to 150W at idle and 150W to 300W under full load.

**HP ProLiant ML30 G5**

* **Processor:** The ML30 G5 uses older Intel Xeon 3000 series processors, which are less power-efficient. These processors typically have a TDP in the range of 65W to 80W.
* **Memory:** Uses DDR2 or DDR3 memory, which is less power-efficient compared to DDR4.
* **Power Supply:** Older models generally come with less efficient power supplies (such as 80 PLUS Bronze or Silver).
* **Idle and Peak Power Consumption:** Older servers often have higher idle power consumption due to less advanced power management features. The ML30 G5 might consume around 70W to 100W at idle and 150W to 250W under full load, depending on the configuration.

**Efficiency Improvements**

* **Advanced Power Management:** The Gen11 benefits from advancements in server management software and firmware that allow for more aggressive power-saving features when the server is idle or under low load.
* **Component Efficiency:** Modern components, including processors, memory, and storage devices, are designed to offer better performance-per-watt ratios.
* **Power Supply Efficiency:** The efficiency of power supplies in modern servers has significantly improved, leading to less energy waste as heat and more effective power delivery.

**Summary**

The HP ProLiant ML30 Gen11 is generally more power-efficient compared to the older ML30 G5, thanks to advancements in technology and design. Despite offering significantly higher performance, the Gen11 manages to reduce overall power consumption and improve energy efficiency, making it a better choice for reducing operational costs and environmental impact in the long run. If precise power consumption figures are critical, it’s recommended to consult the technical specifications or conduct power measurements based on specific configurations and workloads.

DIFFERENCES

**1. Processor and Performance:**

* **ML30 Gen11:**
  + Supports the latest Intel Xeon E-2300 series processors.
  + Improved performance with higher core counts, higher clock speeds, and support for modern instruction sets.
* **ML30 G5:**
  + Supports older Intel Xeon 3000 series processors.
  + Limited to older architectures with lower performance compared to modern processors.

**2. Memory:**

* **ML30 Gen11:**
  + Supports DDR4 ECC UDIMM memory.
  + Higher maximum memory capacity and faster memory speeds.
* **ML30 G5:**
  + Uses older DDR2 or DDR3 memory, depending on the specific configuration.
  + Lower memory capacity and slower memory speeds compared to Gen11.

**3. Storage:**

* **ML30 Gen11:**
  + Supports a variety of storage options, including NVMe SSDs, SATA SSDs, and traditional hard drives.
  + Improved storage performance and capacity with newer interfaces.
* **ML30 G5:**
  + Limited to older SATA and SAS interfaces.
  + Does not support modern NVMe SSDs, leading to lower storage performance.

**4. Networking:**

* **ML30 Gen11:**
  + Integrated with the latest networking options, potentially including 10GbE (Gigabit Ethernet) capabilities.
* **ML30 G5:**
  + Limited to older Gigabit Ethernet interfaces.

**5. Expansion and Connectivity:**

* **ML30 Gen11:**
  + More PCIe slots with support for newer PCIe generations (PCIe Gen4 or higher).
  + Better expansion capabilities for modern GPUs, storage controllers, and network cards.
* **ML30 G5:**
  + Fewer PCIe slots and limited to older PCIe generations.
  + Limited expansion capabilities compared to newer models.

**6. Management and Security:**

* **ML30 Gen11:**
  + Enhanced management features with modern Integrated Lights-Out (iLO) versions.
  + Better security features, including firmware protection and secure boot options.
* **ML30 G5:**
  + Basic management features with older iLO versions.
  + Fewer security features compared to modern servers.

**7. Power Efficiency:**

* **ML30 Gen11:**
  + Improved power efficiency with modern power supplies and power management features.
* **ML30 G5:**
  + Less power efficient due to older technology and components.

**Summary**

The **HP ProLiant ML30 Gen11** offers significant improvements over the **ML30 G5** in terms of processing power, memory capacity and speed, storage options, networking capabilities, expansion possibilities, management, security, and power efficiency. For any modern workloads, especially those requiring high performance, scalability, and advanced features, the Gen11 model is the clear choice. The older G5 model may still be useful for very basic tasks or legacy applications, but it is substantially outclassed by the Gen11 in almost every aspect.