Motorola Powerline MU Solution

Frequently Asked Questions

How many Powerline MU Modems can be served by one Powerline MU Gateway?

We recommend that one Powerline MU Gateway serve 50 Modems for best signal reliability.

You can expect 8-15 Mbps shared among the Modems associated with a given Gateway – assuming that the chosen broadband backhaul delivers at least this amount of throughput.

Ultimately, the ISP will decide the number of Modems to associate with the Gateway depending on user bandwidth needs, peak time calculations and business case.

Technically, a Powerline MU Gateway can support up to 4,094 Modems but this is not a practical number.

What is the true user throughput?

Throughput is 8-15 Mbps shared among the Powerline MU Modems associated with a given Powerline MU Gateway. This takes into account loss through the electric meters and a typical distance of 300 feet from the Gateway to the furthest Modem.

Can multiple Gateways be used within a building?

That depends on the building. For the best performance, the Powerline MU Gateway should be installed after the transformer. Large buildings typically have multiple transformers on subsequent floors throughout the building. In that case, additional Gateways can be added after a given transformer on a subsequent floor. Each Gateway should deliver 8-15 Mbps of throughput to associated Modems – assuming that the backhaul can deliver this level of bandwidth. The transformer also provides a level of electrical isolation that will avoid Gateway-to-Gateway interference.

Should we expect any interference problems in buildings or apartments?

The Intellon 85 Mbps chip is quite robust at handling Powerline noise. It follows the HomePlug ® protocol which was developed with the low voltage environment in mind.

It is important to know that interference potential can come from fluorescent lights, MOV power supplies, and inexpensive cell phone chargers. These devices can cause momentary interruptions but not complete signal failure.

Motorola strongly recommends that users plug the Modems directly into an electrical outlet and not a power strip.

We also recommend that no other devices be plugged into the same outlet as the Modem itself.

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When do I use the capacitive coupling cords that plug into the breaker panel outlets vs the inductive couplers that wrap around the phased electrical wiring that feeds the building directly from the transformer?

For the best performance, the capacitive cords should be used in a building with a single meter (e.g., hotel) and the inductive coupler should be used in multiple metered buildings (e.g., apartment buildings). This allows the least signal attenuation since the HomePlug signal would need to pass through only one meter before reaching a subscriber's electric circuit. In either case, a licensed electrician would be needed to either install the inductive couplers or create outlets off of the breaker panel to plug in the capacitive cords. Either task would require approximately 45 minutes worth of work.

Is the Powerline MU system secure? Can any (non-Motorola) Modem gain access to the network?

The Powerline MU network is secure and uses the following protocols and procedures to achieve system and user protection: Proprietary Initialization Sequence, 56 bit DES Encryption, Modem Authentication, VLAN ID's for each Modem and Network Encryption Keys between Modems and Gateways.

Only the Motorola Powerline MU Modems provide this level of security which requires individual Modem authentication onto the Powerline network which is controlled by the network operator, ISP or property manager.

Is Powerline MU sold as a retail product?

To date, Motorola has sold the Powerline MU portfolio primarily through indirect channels to ISP's and property owners. There are no current plans to sell the products through retail channels.

What geographies are included in your product plans?

Motorola is in the process of distributing the Powerline MU products worldwide. The portfolio has achieved the following approvals: FCC, IC, UL cUL, CE, CB (Modem only. Gateway CB approval should be complete by the end of August.) Additional country approvals have been obtained:

NOM/NYCE (Mexico), BS1363 (UK-Ireland), GOST-R (Russia), Philippines Type Acceptance, Thailand approval, ANATEL (Brazil). Country approvals for Australia, Argentina, Malaysia and Singapore are also in process. Some countries do not require specific approvals for Powerline MU such as Columbia, Peru, Venezuela, and Ecuador,

Are the same models used in every country?

Plug types differ by country. This affects the Modems, the Hybrid Adapters and the capacitive coupling cords that are shipped with the Gateway. The Gateway itself, Panel Extender and Inductive Coupler do not have plugs and are therefore generic.

The Powerline MU product is designed to run on all international grids (100-240 VAC and 50/60 Hz).

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Does the Powerline MU product also expand to deliver home networking?

No, the Motorola MU product is an Access BPL product and is not designed for home networking. The product uses the Intellon Turbo chipset (85 Mbps) which follows the HomePlug protocol. Therefore, the Powerline MU Modem will peacefully co-exist with retail HomePlug modems used for home networking. It is important to note that the carriers available on the electrical wiring (84 carriers) to be used for Internet access would be shared with home networking traffic. This could result in bandwidth reduction.

Do the Powerline MU products operate on medium voltage or low voltage?

The Powerline MU products operate on low voltage only (110-240 VAC) and are installed after the low voltage transformer that serves a given MDU (multi-dwelling unit) or MTU (multi-tenant unit).
The head-end or Gateway can be fed by multiple broadband sources including the Motorola Canopy broadband wireless platform, DSL, cable, T1/E1 or satellite.

Based on customer feedback and demand, Motorola has focused its resources on the Powerline MU (multi-unit) portfolio, which serves MDUs and MTUs.

Motorola Powerline MU is part of the MOTOwi4 portfolio that includes Broadband over Powerline, Wireless LAN, Canopy Fixed Wireless, Point to Point and Mesh solutions for private and public networks. Through the MOTOwi4 portfolio, Motorola is extending the reach and capabilities of operator coverage and delivering IP coverage to virtually all spaces.

Is BPL a more practical solution in MDU's/MTU's than in single family homes?

Yes. The business case is stronger to serve MDUs/MTUs than single family homes for a number of reasons:

- You can serve more subscribers in a smaller footprint
- There is a stronger market need worldwide with a higher concentration of under-served subscribers living in MDU's than in single family homes
- The cost is high to install *competitive* technologies in-building
- Property Managers can use BPL for building management functions in addition to broadband delivery to residents/tenants
- Streamlined transactions - ISPs or Carriers and Property Owners can agree on a BPL deployment directly - Standard electricians can install Powerline MU equipment. In most cases, no utility linemen are required.
- Powerline MU has shorter distances to span to deliver signal to multiple users
- Powerline MU is regulated by FCC Part 15 Subpart B, NOT the new FCC Access BPL Part 15 Subpart G rules
- Powerline MU is deployed inside the premises – underground wire is not typically used which can cause additional signal attenuation
- The Motorola Canopy Subscriber Module can be mounted on a commercial rooftop instead of a utility pole – better line of sight (LOS)
- The electric grid can be more predictable within a commercial building than in single family homes

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More Information

For more information, view the *Powerline MU User Guide* and the *Powerline MU Questionnaire and Troubleshooting Guide* at the following location:

http://motorola.canopywireless.com/support/software/index.php?catid=11

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