

Avaya Energy Saver High efficiency workspace

Table of Contents

- Buildings and IP networks**1
- Energy use and our networks**2
- Energy management services**6
- Learn More** 6

Saving energy? Saving money? Saving the environment? If these critical issues are not on your mind today, they soon will be — driven by new regulations and a rising awareness of the ever-increasing cost of electrical power¹.

From initial customer solution concept and product design, energy efficiency has been on the minds of Avaya communication systems and network products designers. Every day, Avaya develops products and solutions and implements business-grade, IP-based voice, video and data networks around the world. Avaya understands that the network is essential to customers' operations, 24 hours a day, seven days a week. The IP network is becoming ubiquitous throughout buildings supplying communications not only to every employee, tenant and guest, but to lighting, HVAC, fire and security systems. Whether the network is in a manufacturing plant or an office building, school, hospital, military base or airport, the IP network is a core business asset that provides business-critical services.

As the prevalence of IP networks expands, there has been an ever-increasing focus on ensuring that these IT resources use energy as efficiently as possible. For years, Avaya has been providing customers with some of the most energy-efficient networks and Unified Communications (UC) solutions and continues to provide innovative products enabling customers to meet their sustainability and energy reduction goals.

Buildings and IP networks

The real ROI...

- Use less energy (as much as 40%) = less BTU = lower HVAC consumption = lower costs
- Spend your IT budget on your IT and not with the electric company



The owners of all commercial buildings are facing major social, regulatory and economic pressures to improve their use of energy and resources. Most of the consumption of energy in buildings involves three main systems: the heating, ventilation and air conditioning (HVAC) system, the lighting system and process energy. Process energy is essentially the electrical power that devices use, including the components of IP networks. IT networks consume a significant percentage of the power within buildings.

¹<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:339:0045:0052:EN:PDF>

For example, in Europe and North America, buildings account for approximately:²

- 72 percent of electricity consumption
- 39 percent of energy use
- 38 percent of all carbon dioxide (CO2) emissions

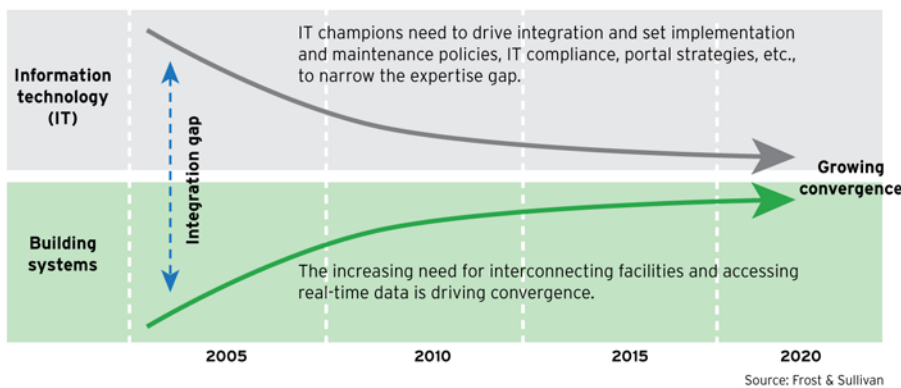


Figure 1. Evolution of convergence between building systems and IT systems

IP networks are not simply a consumer of building energy. They can be, in fact, a critical part of a building ecosystem to monitor and manage energy. If you examine traditional building automation systems such as HVAC and lighting control, you will find they are increasingly relying on the IP network to communicate among the myriad of data points that make up those systems. For example, the major technical communications protocols for these systems — BACnet, Lonworks and Modbus — now all have versions allowing these protocols to be managed over an IP network. In addition, many of the building systems require operator workstations to configure the system, set schedules and generate reports, as well as servers to host application software. Because IP and Ethernet networks are standards-based using open protocol language, most of the building control systems either currently run on, or are evolving to, IP-based networks.

With tools for reliability and security as well as a vast pool of support resources, the infrastructure of IP-based networks is becoming essential for building control systems. The result is that IT and building systems are converging (see Figure 1) and the IP-based network has become the critical backbone network in a building. After all, the existing IP networks are trusted for other mission-critical business applications and the extension to building systems leverages the power of these networks.

Avaya understands that our customers' IP-based networks are becoming the means to connect different building devices and to collect the necessary data to improve monitoring and management of energy use, and ultimately the performance of their building as well as their business operations. Building information systems (BIS) that control lighting and HVAC are increasingly utilizing the IP networks to transport energy information. With Avaya unified communications solutions, significant energy efficiency opportunities exist for customers to integrate their IP networks and BIS systems.

Energy use and our networks

How can Avaya increase customers' building efficiency?

Lets start with the IP hardware itself — Avaya LAN Switches, call servers, gateways, unified messaging servers and gigabit IP phones have been independently tested and it has been proven that Avaya solutions are much more energy-efficient than comparable equipment from Cisco.

²<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718>

For example, a third-party independent research firm, Tolly Group³, tested and reported their “bottom line” of a comparison between Avaya and Cisco VoIP solutions, concluding:

- The Avaya VoIP solution produces significantly better energy savings than the comparable Cisco solution
- Avaya IP phones are three times more efficient than equivalent Cisco IP Phones
- Evaluated Avaya components consumed 60 percent less energy than similar Cisco equipment
- Chassis-based approach allows support for many features and a smaller, energy-efficient footprint

Per the Tolly audited results, every component of the Avaya configuration is more energy-efficient than comparable Cisco equipment. For the core VoIP equipment, (the call server, media gateway and voicemail), Avaya-tested equipment consumes only 191.5 watts, while comparable Cisco equipment tested uses 540.8 watts. In other words, Cisco’s call handling solution consumed twice the power of the similar Avaya solution. In fact, Avaya uses approximately 65 percent less energy. In addition, our switch uses about 33 percent less energy than the comparable Cisco switch. The always-on nature of the network accentuates the differences over the course of a financial year.

Avaya Energy Saver — The IP dimmer switch

Avaya is pleased to now extend our broad-based energy-saving value proposition to its energy management systems. Avaya not only provides energy-efficient equipment and solutions, but also tools for our customers to monitor and manage the energy consumption of their Avaya network via the Avaya Energy Saver. Avaya Energy Saver is a part of the Avaya Unified Communications Management (UCM) solution that enables centralized quality of service, IP filter and Avaya Energy Saver policy-based provisioning for Avaya equipment. At its core, Avaya Energy Saver introduces new energy service architecture for customers to monitor, report and enforce Energy Saver and PoE policies.

How does it work? Avaya Energy Saver manages the Power-over-Ethernet (PoE) ports on Avaya LAN switches, allowing network managers to enable, disable or set different power consumption for various IT devices on a condition or schedule. Avaya Energy Saver controlled devices include all VoIP telephones, wireless access points, PoE card readers as well as any other PoE devices in the building such as IP video surveillance cameras. The overall result from managing these disparate nodes of the IP network is a reduction in peak energy demand for IT networks. Simply put, Avaya Energy Saver automatically detects powered device types connected to Switch ports throughout the network such as IP phones and wireless access points. By identifying and grouping these types of devices, businesses can quickly and easily provision energy savings policies on groups of devices. Then, like a dimmer switch for lighting, network managers can turn down the power to the IP network while still providing network access.

How does Avaya Energy Saver save power and operating costs? It reduces the consumption of power to a lower mode such as standby power (see Table 1). Standby power, now regulated in the EU⁴ for information technology equipment, is a very low watt consumption state while still providing minimal functions. Via a robust IP backbone, building managers can now work in synchronization with IT managers to right-size the power load to meet the dynamic demands of the IP network.

³<http://tolly.com/DocDetail.aspx?DocNumber=210110>

⁴<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:339:0045:0052:EN:PDF>

Switch Model	Idle Power ¹	Normal Power ²	Energy Saver Power ³	Energy Saver Benefit	Energy Saver Benefit %	Normal PoE Power ⁴	PoE Energy Saver Benefit ⁵	PoE Energy Saver Benefit %	Nominal Energy Saver Benefit ⁶	Nominal Energy Saver Benefit %
ERS 4526T	37	43	37	6	14%	-	-	-	3,228	45%
ERS 4526T-PWR	35	41	35	6	15%	185	179	97%	15,214	40%
ERS 4550T	47	55	45	10	18%	-	-	-	4,380	47%
ERS 4550T-PWR	45	50	40	10	20%	338	328	97%	26,096	40%
ERS 4524GT	46	68	45	23	34%	-	-	-	6,564	57%
ERS 4524GT-PWR	40	62	41	21	34%	206	185	90%	20,986	47%
ERS 4526GTX	54	75	53	22	29%	-	-	-	6,876	55%
ERS 4526GTX-PWR	50	71	49	22	31%	215	193	90%	22,298	46%
ERS 4548GT	66	103	63	40	39%	-	-	-	10,500	61%
ERS 4548GT-PWR	61	98	58	40	41%	386	346	90%	38,372	47%

Table 1. Power Consumption for Ethernet Routing Switch 4500 models

Notes: General: Power measurements conducted in the UK operating at 240VAC during September 2009 running pre-release v5.4 software. Actual results may vary slightly depending on supply voltage, ambient temperature & other devices connected to the Switch. Values are shown in Watts unless otherwise indicated.

¹ Idle Power indicates the typical power consumed with the Switch running operational software but with no ports connected. ² Normal Power indicates the typical power consumed with the Switch running operational software, with all ports connected, and typical utilisation levels; no SFP or XFP Uplinks are connected. ³ Energy Saver Power indicates the typical power consumed with maximum savings enabled. ⁴ Normal PoE Power indicates the typical power consumed, based on a nominal consumption of 6 Watts per Port. ⁵ PoE Energy Saver Benefit indicates the typical power saved with PoE Energy Saver enabled. ⁶ Nominal Energy Saver Benefit summarises the total weekly saving when an Energy Saver schedule is applied during Off-Peak hours; nominally 12 hours each business day, & weekends.

Avaya Energy Saver solution aligns the consumption of energy to the use of the device and the occupancy of the building. It manages the power to the devices, either turning the devices on or off, or “dimming” the power to the device, much like a lighting control system. Avaya is uniquely positioned to help synchronize employees, networks,

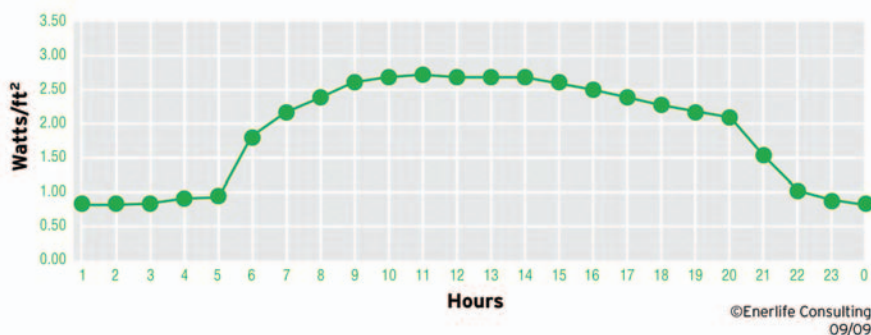


Figure 2. Hourly demand intensity

communications and building systems on the backbone of the IT network. Figure 2 provides a visual representation of a normal hourly energy usage in watts/feet over 24 hours in a sample building. The ICT systems (Servers, Switches, storage and telecommunications) that support the key processes used by employees to drive customer engagement follow a similar pattern, with peak loads during traditional business hours.

Figure 3 below demonstrates the opportunity to manage network power consumption based on employee policy and time of day, via Avaya Energy Saver embedded within the Avaya Enterprise Policy Manager. From this dashboard, IT managers can drill down to specific ports and adjust the IT load appropriately to right-size the network as demand dictates. They can also monitor and manage the health of the network, with real-time and dynamic data flowing to the power management software.



Figure 3. Enterprise Policy Manager

Powered IP Phones

It is not just the network backbone where energy efficiency gains can produce tangible cost reductions for companies, the IP Phones are also opportunities for savings. In this regard, Avaya IP phones offer significant long-term energy savings potential versus comparable models. Enterprise phone systems have become powerful productivity tools. Since the advent of VoIP and now UC, phones have become mini-computers with bright-colored displays that store and collect data via XML applications. Most employee offices and common areas are equipped with a phone; however, unlike PCs, IP phones can remain in-service for up to 10 years before replacement. IP phones can be a source of “vampire” power, because whether in use or not, 24 hours each day, IP phones are consuming energy.



IP Phone 1165E

With this in mind, Avaya's IP Phone 1165E is a color Gigabit Ethernet IP phone designed to save energy. Unlike most Gigabit IP phones, the Avaya IP phone 1165E consumes only 3.4 watts of power while in idle or stand-by mode.

Continuing a proactive strategy of producing energy-efficient devices, Avaya updated the IP Phone 1120E and 1140E models in the latter part of 2009. These ecodesign updates lower the power consumption from Class 3 to Class 2, as outlined in Figure 4. Lower energy usage is achieved while maintaining the same sleek, sophisticated design.

Avaya Phone		Device	Regulatory Power	Idle Stand-by power	Typical Thermal
Original design	1120E/1140E	Gigabit IP Phone	Class 3 (6.49-12.95 watts)	6.59 watts	22 BTU/hr
New ecodesign	1120E/1140E	Gigabit IP Phone	Class 2 (3.84-6.49 watts)	3.6 watts	12 BTU/hr
	1165E	Gigabit IP Phone		3.4 watts	12 BTU/hr

Figure 4. Ecodesign lowers power consumption

Energy management services

Looking at the big picture, Avaya offers a complete solution of energy-efficient equipment together with the necessary tools to further align the energy consumption of the network with its use. By combining latent energy efficiency of the equipment with intelligent management of the network via Energy Saver, Avaya incorporates the most advanced power conversion design and technologies to achieve the highest energy-efficiency standards. Avaya customers expect high performance with energy efficiency while they execute all the core processes that drive their business. With Avaya's innovative, time-sensitive energy management solutions, when your employees are resting, so can your building, saving you money and the environment.

Learn More

For more information on how you can save with Avaya Energy Saver, please visit avaya.com

About Avaya

Avaya is a global leader in enterprise communications systems. The company provides unified communications, contact centers, and related services directly and through its channel partners to leading businesses and organizations around the world. Enterprises of all sizes depend on Avaya for state-of-the-art communications that improve efficiency, collaboration, customer service and competitiveness. For more information please visit www.avaya.com.



INTELLIGENT COMMUNICATIONS

© 2010 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. and are registered in the United States and other countries.

All trademarks identified by ®, TM or SM are registered marks, trademarks, and service marks, respectively, of Avaya Inc.

All other trademarks are the property of their respective owners. Avaya may also have trademark rights in other terms used herein.

References to Avaya include the Nortel Enterprise business, which was acquired as of December 18, 2009.

04/10 • MIS4512

