



Empowered by innovation **NEC**



Enterprise Communications

- sustainably improving the quality of life

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Introduction

More and more individuals, organisations, businesses and governments have become convinced of the necessity to protect and preserve the Earth and its environment. With growing evidence that carbon dioxide output is the main cause for global climate change, reducing our carbon footprint and minimising energy consumption have become important goals – for businesses and individuals alike.

Governments and large organisations all over the world are increasingly asking companies to prove that their technology is green. This means not only proving that their energy consumption is lower, as a company, but also that their products and solutions require less energy to operate.

NEC has a head start on the competition when it comes to ‘Green IT’. Japan has long been concerned about energy usage and NEC has implemented global programmes to reduce CO₂ emissions.

Besides reducing energy consumption directly, there are many other parts of an organisation’s operations in which advanced solutions and new ways of working can have positive effects on the environment. Today’s communications solutions can help in several ways, and that’s where NEC’s Enterprise solutions and its EMEA operation, NEC Infrontia have an important role to play.

We believe that the current economic situation provides even more opportunities to spur developments towards Green business. In the first place, a somewhat slower pace of the economy will require less energy consumption for production, transportation and the like. Secondly, governments are planning to stimulate the economy by investing in longer term (IT) infrastructural projects, including the development of broadband networking. In addition, with organizations attempting to reduce costs by limiting travel, telecommunications - particularly the latest developments in Unified Communications - can enable people to maintain communications and collaboration across the globe without requiring their physical presence. Needs such as these are amply served by the ICT solutions NEC Infrontia provides.

Our Environmental Policy

NEC has always been at the forefront when it comes to technological innovations, many of which are related to environmental protection. It is more than five years since NEC established its Environmental Management Vision, which focuses on the following important areas:

a) *Reduce CO₂ emissions resulting from production and other activities*

NEC aims to cut annual energy-derived CO₂ emissions by 140,000 tons by 2011. It aims to achieve this through a combination of production innovation activities and planned introductions of energy-efficient equipment, alongside programmes to reduce energy consumption by data centres and energy-saving efforts at NEC Group offices.

NEC is also targeting emission reductions by replacing PFCs, HFCs and other greenhouse gases. It is attempting to reduce distribution-related emissions by limiting the use of air transport (especially chartered cargo flights) and promoting mixed-mode distribution. Overall, these programmes target a reduction in CO₂ emissions of 350,000 tons during the fiscal period from 2008 to 2011.

b) *Reduce CO₂ emissions by promoting the use of energy-efficient products*

NEC has achieved annual gains in energy efficiency of 10% by improving performance in terms of faster transmission speeds and quicker data processing. NEC will continue working to achieve 10% annual energy efficiency increases by investing in technical development programmes to create high-efficiency devices and energy-saving control software. The aim is to use such advances to develop numerous top-class environmentally friendly products.

c) *Reduce CO₂ emissions through IT solutions*

NEC promotes the development and adoption of IT solutions to support more eco-friendly working, living and social infrastructure. This has involved the introduction of an internal system to assess all NEC software and services during the development stage, with those products and services that significantly reduce CO₂ emissions identified by an eco-symbol. Going forward, NEC is creating IT solutions that are particularly effective in reducing environmental impact, in order to support the emission-reduction efforts of its customers and society.

By 2017, NEC aims to be the leading company in the IT sector exploiting the power of innovation, in order to create an information society which respects both Man and the Earth.

As a key part of the NEC Corporation, NEC Infrontia recognises that its activities have an impact on the environment and is committed to reducing any adverse effects through a programme of continuous improvement.

As part of an on-going drive for quality in all things we do, we are committed to minimizing the impact our operations have on the environment, and to providing environmentally sound products and services. These enable organisations to implement

communications solutions which contribute to a more efficient and effective deployment of scarce resources (such as time, energy and capital).

An **environmental management system** is in place within NEC and this clearly sets out policies and procedures which help us to:

- **Comply** with and, wherever possible, exceed current and future legislation and other requirements
- **Monitor, measure and report** on the environmental impact of our activities
- Strive to **prevent** and continually **reduce** any adverse environmental impact arising from our business, to levels as low as reasonably achievable
- **Focus** on the key area of hazardous substances in our products
- **Integrate** environmental objectives into the everyday management of our business
- **Establish** effective communications on relevant environmental issues with employees, customers, suppliers and other parties with an interest in our business

Our Green drive and actions

NEC was Green long before it was cool to be Green and has been environmentally conscious since the early 1970s.

A short summary of our activities in this field:

1971 - NEC issues Environmental Management Guidelines directing NEC managers to pursue green policies.

1991 - NEC publishes an Environmental Charter comprising seven 'action points' to be followed by all NEC employees. One of these is 'To produce energy- and resource-saving products, while giving careful thought to environmental safety issues in development and planning'.

1998 - NEC initiates an internal environmental labelling system to help promote the development of environmentally sound products. Only NEC products that meet or exceed NEC's highest environmental standards can display the NEC eco-symbol. The symbol is currently applied to 5,273 products in 55 categories and these figures are continually increasing.

2002 - NEC launches its Forestation Program, which is committed to planting 6,750 acres of trees by 2010. NEC's commitment to maintaining forests runs through to 2020, when the annual volume of CO₂ absorbed by the trees it has planted could approach one million tons.

2007 - NEC releases its Environmental Management Vision 2010, which publicly commits NEC to reducing its net CO₂ footprint to zero by 2010. Over the past decade, the company has made great strides in reducing its CO₂ emissions.

2008 - NEC Solutions introduces new products that are both energy-efficient and compliant with green manufacturing standards. NEC introduces optional side panels made from bio plastics on new terminals.

Advances in Enterprise Communications

Within the field of enterprise communications, our products are in line with NEC's stated goal of reducing the net impact of its CO₂ footprint to zero by 2010. Our Green Initiative is responsible for:

- Lowering the energy consumption of these products
- Complying with green manufacturing standards
- Eliminating chemicals that increase CO₂ emissions
- Using chemicals that are environmentally safe (e.g. eliminating lead and mercury from circuit boards)

NEC Infrontia is committed to:

- meeting and, wherever possible, exceeding targets imposed by legislation and other regulations. For instance, our products comply with the new EUP (Energy Using Products) guidelines;
- preventing pollution of the environment resulting from its activities, through the effective application of an environmental management system that meets the requirements of ISO 14001:2004 and NEC Infrontia's corporate policies;
- reducing consumption of materials in all operations and re-using materials wherever possible, by promoting recycling and the use of recycled products. Most of our products comply to the WEEE (Waste Electrical and Electronic Equipment) directive (recycling at end of life) and we have taken measures to allow for professional recycling at the end of our products' life cycles;
- educating, training and encouraging employees to act in a responsible manner with regard to environmental issues;
- identifying and achieving annual environmental objectives and targets;
- conducting internal reviews in order to measure performance and ensure policy goals and standard requirements are met;
- encouraging suppliers to consider similar practices by communicating our Environmental Policy.

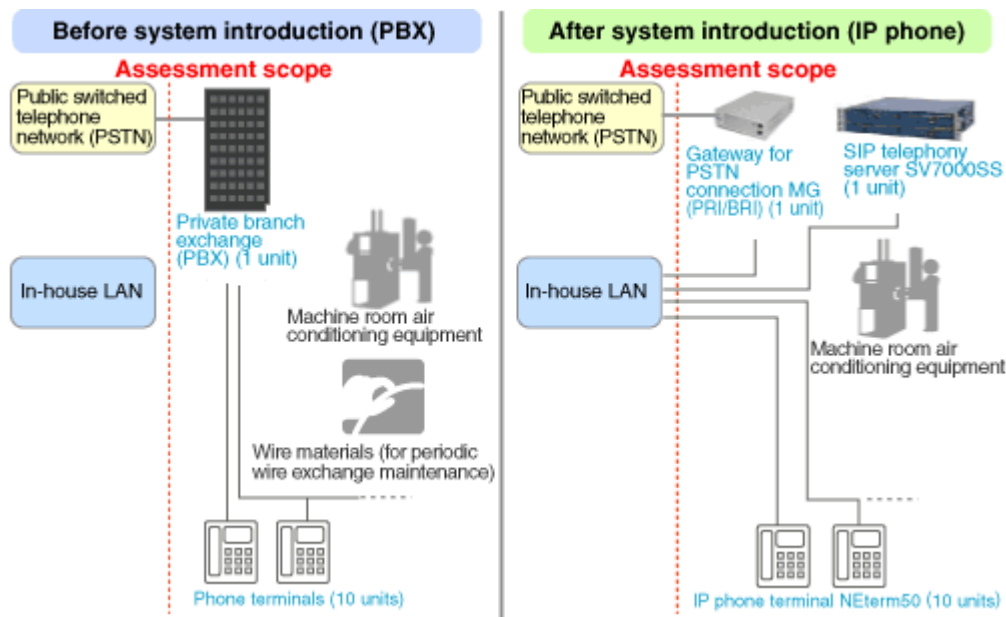
Besides reducing our own company footprint, NEC's commitment to innovation drives technology developments and product portfolio improvements which, in turn, contribute to a better environment. These are illustrated by the evolution in enterprise communications from PBX technology to IP telephony, from hardware to software, and from separate voice and data solutions to converged solutions and Unified Communications, as offered by our latest UNIVERGE portfolio.

Environmental Impact Assessment of IP Telephony

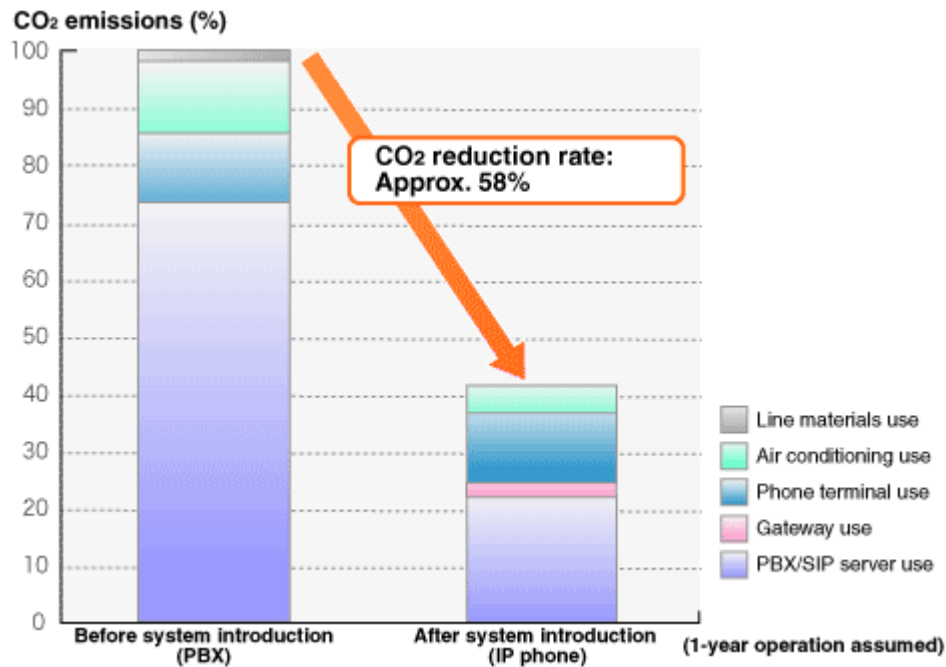
Progress in communications technology (i.e. developments spurred by the internet and IP standards) has resulted in great improvements in energy consumption over the past few years

In order to clarify the environmental effect of introducing server-based IP Telephony, NEC performed an environmental impact assessment comparing IP Telephony with the conventional private branch exchange (PBX). This was based on the use of 10 phone terminals before and after switching systems, over a period of one year. In the case of the conventional PBX, periodic wire maintenance was necessary, due to personnel transfers, etc. In the case of IP telephony, such maintenance was not needed. CO₂ emissions were calculated based on the total life cycle of each system, also factoring in the use of equipment included in the phone network, the use of air-conditioning equipment in the machine room and the use of materials during periodic wire maintenance. Unlike a traditional extension phone network (voice network), IP Telephony solutions are server based, using a LAN as connecting network.

Based on all of the above, the IP Telephony solution produced a reduction in CO₂ emissions of approximately 58%, compared to the PBX system, thanks to the energy saved by UNIVERGE products and the reduction in air conditioning in the power room.



IP Telephony assessment model diagram



IP Telephony assessment result

Calculation method

For the use of in-house phone network component equipment, the CO₂ emissions resulting from the production of power used by the PBX, SIP (*) telephony servers, phone terminals, etc., was assessed.

For the use of air conditioning equipment in the machine room, the CO₂ emissions resulting from the production of power required by the air conditioning equipment to be added in case equipment to be assessed is installed in the existing machine room, were assessed.

For the use of wire materials, the CO₂ emissions resulting from the production and discarding of wire materials required for wire maintenance of the conventional PBX, were assessed.

(*) SIP: The acronym of Session Initiation Protocol, a communication control protocol that is an international standard, which is applied to Internet phones, etc. using VoIP.

Further power savings

Besides reducing the power consumption of servers and terminals, and the other benefits of introducing IP Telephony, present-day enterprise communications technology offers further energy-saving opportunities.

a) *Introducing softphones*

A further energy-saving alternative in enterprise telephony is the introduction of softphones to replace conventional phone terminals. Softphones are implemented by installing software on PCs and are used by connecting a handset or headset to the PC. Softphones are provided with application sharing and simple messaging functions, and allow paperless viewing of documents. Using softphones instead of physical terminals, therefore, reduces waste as well as resulting in energy savings.

b) *Power over Ethernet (PoE)*

Our communication platforms are designed to power end devices using Power over Ethernet. This minimises power dissipation in the network and eliminates the use of energy-consuming adapters. Furthermore, the need for electrical wiring and outlets for end devices is eliminated. Power over Ethernet can be used to power IP phones, DECT base stations and wireless LAN access points.

c) *Evolutionary migration and upgradability*

Realising the pivotal role enterprise networks have within organisations – with respect to infrastructure, business processes and investments in equipment and training – our approach to introducing new innovations takes an evolutionary path. In developing new products and solutions, and introducing new versions of existing hardware or software, we pay the utmost attention to maximising the use of existing equipment and exploiting existing investments to the fullest, as well as avoiding waste.

Our open approach to standards, products and solutions enables servers, terminals and applications to become interchangeable. End user terminals and applications can be used across our platforms, while hardware upgrades are accommodated by exchanging printed circuit boards.

How our solutions contribute to a better world

Organisations are under pressure to improve workplace performance but need to adapt their underlying business processes. Inefficiencies, as well as their environmental impact, can be addressed by streamlining communications and reducing or avoiding business gridlock by using modern conferencing and collaborative tools to avoid unnecessary travel.

Our latest communications solutions focus on efficiency for the customer and help enterprises reduce their environmental impact. They include tools that enable businesses to become more efficient, while reducing CO₂ emissions and waste. Unified Communications, Business Mobility solutions and advanced applications reduce the need for business travel and make telecommuting easier than ever. Our broad portfolio of solutions includes:

- Unified Communications applications that allow customers to fully exploit the combination of voice, data, messaging and web collaboration.
- Business Mobility solutions, such as IP DECT and wireless LAN, which reduce the need for physical wiring in offices, while Fixed Mobile Convergence enables mobile employees to be reachable and accessible by a single number wherever they are.
- Thin client solutions that provide end users with PC applications without the need for local storage and processing, thus requiring less hardware, consuming far less energy and reducing heat dissipation. NEC's thin client solutions use 70% less energy than a standard thin client.

Using these solutions helps to reduce energy consumption and limits harm to the environment.

Unifying Enterprise Communications

Unified Communications (UC) plays a huge role in NEC's enterprise communications activities. UC is actually a compilation of technologies and applications that can include everything from contact centre solutions, instant messaging, video and web collaboration to presence information, enabling customers to decrease costs and maximise productivity.

Unified Communications allows businesses to collaborate in real time, with the flexibility to make the appropriate form of communication available every time and everywhere. UC technologies allow employees to conduct virtual interactions that provide a rich and effective collaborative experience. In this way, teams become more agile and productive, significantly reducing the time, expense and environmental impact of travelling to attend meetings.

First contact can be through a phone call or audio conference, before switching to a richer form of interaction, such as a Web conferencing for collaborating on documents, or a video conference to provide a greater depth of 'live' human interaction. This enables individuals and teams to perform complex collaborative tasks with ease, wherever they may be.

With business travel - national and international - being responsible for a major part of company greenhouse gas emissions, present-day sophisticated communications can contribute considerably in limiting environmental impact. Unified Communications offers ways to cut down on the need for physical presence, without losing the human contact that remains an essential part of doing business effectively. Significant reductions in greenhouse gas emissions can be achieved when UC virtual meeting tools are used as an alternative to airline, automobile or rail travel to attend a meeting.

Taking advantage of these advances in communications technology and the wide range of systems and applications available from NEC Infrontia, organisations can implement solutions that not only improve their efficiency and competitiveness, increase the service they provide to their customers, but also contribute significantly to a better quality of life.

About NEC Corporation

NEC Corporation is one of the world's leading providers of Internet, broadband network and enterprise business solutions dedicated to meeting the specialized needs of its diverse and global base of customers. NEC delivers tailored solutions in the key fields of computers, networking and electronic devices, by integrating its technical strengths in IT and Networks and by providing advanced semiconductor solutions through NEC Electronics Corporation. The NEC Group employs more than 150,000 people worldwide. For additional information, please visit the NEC home page at: <http://www.nec.com>

Document information

This document is intended to provide outline information and can change without prior notice. Issued March 2009.

Additional Resources

NEC Environmental Activities website: <http://www.nec.co.jp/eco/en/>