

## THIN CLIENT COMPUTING MEETS COMPANIES ENERGY REDUCTION REQUIREMENTS

An abstract on how thin clients contribute to reducing environmental impact during business operation.



# 2X WhitePaper

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## THIN CLIENT COMPUTING MEETS COMPANIES ENERGY REDUCTION REQUIREMENTS

This whitepaper explains how IT technologies such as thin clients can impact on green business operations. It describes the ways which SBC minimises the first, second and third degree effects of the environmental impacts during business operations.

### Contents

Introduction: What is thin client computing.....	3
Meet the emissions commitments .....	3
View on impact.....	4
Operating figures and key data .....	4
Ten Arguments for SBC .....	5
Conclusion .....	6
About 2X ThinClientServer.....	6
About 2X ApplicationServer .....	6
About 2X .....	7



## Introduction: What is thin client computing?

Thin Client Computing is a technology whereby applications are deployed, managed, supported and executed on the server and not on the client. Instead, only the screen information is transmitted between the server and client. This architecture solves the many fundamental problems that occur when executing the applications on the client itself.

In server based computing environments, hardware & software upgrades, application deployment, technical support, and data storage & backup, are simplified because only the servers need to be managed. Data and applications reside on a few centrally managed servers rather than on hundreds or thousands of clients. PCs become terminals. They can be replaced by simpler, less expensive and more importantly, easier to manage devices called “thin clients”.

A thin client mainly focuses on conveying input and output between the user and the remote server. A thin client does not have local storage and requires little processing resources. In contrast, a thick or fat client does as much processing as possible and passes only data for communications and storage to the server.

## Meet the emission commitments

Today environmental activeness is not just a marketing tool. Reduce emissions is a political issue. With no or less agreement on how nations should actually go about achieving a more carbon free environment. Conflicting debates regarding a cap-and-trade carbon emission or an introduction to imposing carbon tax on all users are held worldwide.

In fact industries and governments are noticeably under political pressure to meet their commission commitments under the Kyoto Protocol. Company's emission rights have to comply with the company's commitments and if the result does not comply they will be fined. A carbon tax rate set on the consumption of carbon in any form would encourage industries to consume less in order to save expenses. In any case, investments in technological innovations with which companies can reduce their greenhouse gas emissions, must be the result.

Accordingly to Gartner IT contributes two percent of global carbon dioxide emissions and by 2010 environmental issues will be among the top five IT management concerns in North America, Europe and Australia. In the USA today about 1% of the national electricity consumption is caused by PCs and in Germany 110000t electronic waste per year is caused by IT.

In succession, CIOs need to be aware of what constitutes to the environmental impact of the whole organisation and on what extent IT can be a liability in this aspect. This paper focuses on the client and points out some of the ways to reduce a company's environmental impact by moving to server based computing (SBC.) Environmental impact happens in a direct and indirect way during all phases of PC production and/or use. Here we do not focus in detail on production chains, in-house-use or the recycling process of a Thin Clients vs PC. This is a summary that points out the advantages of SBC in regards to reduce emission and looks on direct and indirect impact of SBC in general.

## View on impact

### First Degree Impact:

The most direct way of impact which Gartner classifies as 'First Degree Impact'. This is the impact of IT itself which includes electronic waste and consumption of energy in the data centre.

### Second Degree Impact:

Besides this 'First Degree Impact' we have to consider a 'Second Degree Impact' which is the impact of IT on business operations and the supply chains.

### Third Degree Impact:

Moreover the 'Third Degree Impact', which describes the 'in use' phase of the enterprise's products or services, plays a relevant role and can contribute to reduce CO2 emission.

## Operating figures and key data

A Thin Client consists of less electronic elements and spare and wear parts than a PC and this reduces its:

- weight: Thin Clients weight 30% of PCs.
- volume: their specific volume is 20 % of PCs.
- electronic use: Thin Clients consume only 30% of electricity.

### Evidence:

Moving IT to thin client technology causes a direct first degree impact of 70% less consumption of energy, and a significant cutback of electronic waste and asset disposition. Moreover the second and third degree impact contributes meaningfully to reduction of CO2 emission.

## Ten Arguments

- Thin Client Computer hardware consumes 20W to 40W compared to an average PC that consumes 60W to 110W during operation mode. However, considering that a single PC cannot be replaced by one TC due to the fact that for every 20 to 50 users you need one Terminal Server, because executable files are processed on a terminal server, still makes electricity consumption about 70% less.
- Less components are causing less electronic waste as a direct impact for the organisation.
- A thin client can be used longer and has a longer life cycle since it consists of less removable components and since processing is executed on the server. A longer life cycle reduces electronic waste.
- Less components cut down the complexity of the manufacturing. The supplier chain in general is less complex.
- Thin Clients need less maintenance during the actual operation because they consist of less removable components which reduces again the impact of the supplier chain.
- Thin Clients have dimensions of only one fifth of PCs, therefore the transportation and shipment consumes less volume and obviously emission is reduced as a second degree impact. Both PCs and Thin Clients are produced in ASIA, while the raw materials are shipped from Africa or South America.
- Heat emission of a Thin Client is less since no HDD is included. This plays a significant role for an organisation situated in the hot areas of the world. The result is a cut down in cooling system usage.
- Converting inventory of fat clients into Thin Clients expands the life cycle of fat clients. As a result the annual amount of electronic waste is reduced.
- Publish Applications to home workspaces reduces the need for workforce mobility and implicates reduction of emission caused by travel.
- Centrally manage the shut down of Thin Clients during off hours reduces electricity consumption and CO2 emission. A machine in sleep mode consumes 35w.

## Conclusion

This paper is aimed to focus on the effects that thin client computing impact has on environmental affairs and a number of direct and indirect effects have been discussed when moving to server based computing (SBC).

Every company does experience the potentials of impact in different ways within their individual organisation. Therefore understanding where an organisation offers the most opportunities to decrease CO2 emission as well as understanding the SBC products and where the most impact can be realised by implementing and using them is the individual challenge.

A good start is to look at the relative weight of each company department's overall environmental impact and the situation is certainly different for the manufacturing industry than for the service sector or for governmental institutions. Then looking for the right vendor who can provide the product and/or service to reduce pollution and energy consumption is constitutive.

The environmental value of IT has become an important matter for running an organisation, and SBC can definitely contribute to improve a company's Carbon Footprint.

## About 2X ThinClientServer

2X ThinClientServer is complete solution for the central deployment, configuration and management of thin clients & user's connection settings. Both PCs (converted 2 thinclients) & thin client devices from any vendor are supported via 2XThinClientOS. Thin client settings (RDP / ICA / NX), screen size, Terminal server type (Windows/Citrix/Linux etc) and name can be controlled centrally by user, group or department (Active Directory/LDAP). Further information is available at <http://www.2x.com/thinclientserver/>.

## About 2X ApplicationServer

2X ApplicationServer allows you to seamlessly publish and manage any Windows application onto remote Windows, Mac or Linux desktops. The application only needs to be installed once on the server eliminating the administration hassle of deploying the applications on all workstations. By transmitting just the screen updates rather than the client server data, allows for remote access from everywhere. Further information is available at <http://www.2x.com/applicationserver/>



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