
Review on Green Technology Implementation Challenges in University Data Centre

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A data centre is a network of computer servers used by an organization to either save, process or distribute large amounts of data. A green data centre is a repository of data where electrical, mechanical, lighting and computer systems are designed for maximum energy efficiency and minimum environmental impact. Due to increase demands of data in the university, data centre not only consume high quantities of energy, but produce carbon dioxide along with other IT inefficiencies. With the dynamic changes in technology and the exponential rise in quantities of data, the need for implementing green data centre have become the need of the hour. Green technology in data centre will not only reduce costs and emissions, but will provide operational benefits as well. However, there are challenges that need to be faced in order to implement green technology in university data centre. This review will explore what is green technology is all about, its challenges that may hampered to the implementation in university Data Centre and solutions that may combat the limits.

Keywords: green technology, green data centre, university, data centre

1. INTRODUCTION

The energy consumption cost and environmental effect of data centre are key research areas nowadays. Due to increase in demands of data, data centre not only consume high quantities of energy, but produce carbon dioxide along with other IT inefficiencies¹. Green IT aims to design a framework to enhance performance of data centre and make them energy efficient. Different frameworks may include implementing green metrics like Power Usage Effectiveness (PUE), developing load balancing algorithms or designing architectural principles for energy efficient management of clouds and energy efficient resource allocation to reduce carbon dioxide emissions and save costs¹. With the dynamic changes in technology and the exponential rise in quantities of data, the need for implementing green data centre have become the need of the hour.

Green technology can help this present generation to meet its own needs without compromising the ability of future generations to meet their own need and thus

become self-sustainable. Green energy is more efficient, more energy conserving and enables one to do more with less². It promotes the production and manufacture of products that can be re-used and thus end the “cradle-to-grave” type of manufacturing; it creates newer patterns of production and consumption thus minimizing waste and losses and eventually toxic dumping on the planet³.

This paper presents the background of green technology and viable efforts to ensure its implementation is achievable. Then, it will discuss on challenges towards implementation of green technology into university data centre. Further discussion is briefly on impact with green technology implementation.

2. GREEN TECHNOLOGY

Green Technology has no specific given history/background but it has several past citations which have evolved and led to the “Green Technology movement”. From President Jimmy Carter telling Americans to wear sweaters and switch of the thermostats