

# 智慧綠色校園暨所屬場域之雲端管理系統建置與推廣

執行單位

國立中興大學 計算機及資訊網路中心

計畫主持人

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- 本計畫執行重點著重在雲端服務推廣，服務範圍擴展至TANet夥伴學校。同時在虛擬桌面與虛擬軟體方面，於虛擬主機基礎上建立雲端服務中心，落實校園節能主軸目標。並於綠色機房利用相關技術增進能源使用效率。

## 虛擬主機服務推廣

### 校園雲端服務推廣

104年	新增	26
105年	新增	59
106年	新增	147

預估一年總共可節約 406,464 度電  
約 NT 1,219,392 電費

雲端虛擬主機服務推廣，總收容數為232個。

## 雲端虛擬教室

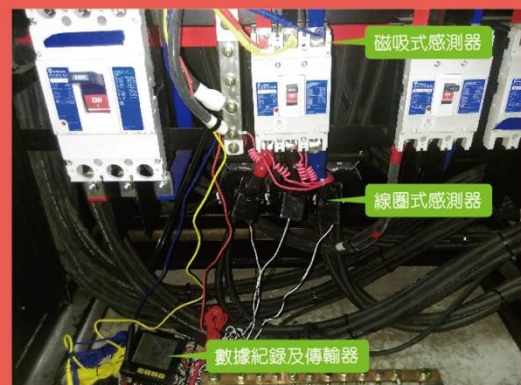
綠色校園計畫導入虛擬雲端桌面 VDI 於電腦教室

VDI 讓電腦使用年限延長.....(節省汰換經費)



利用VDI技術建立4間雲端虛擬教室，可讓200位使用者同時上線使用。

## 非侵入式負載監控



透過MACD技術分析機房用電趨勢，提前預測設備故障發生。

- 舉辦多場雲端服務推廣活動，並針對各種應用需求進行技術輔導及教育訓練，藉此提高使用者使用雲端服務的意願。因此成功推廣**59**台VM作為多項應用使用。
- 建立校園節能計畫介紹與成果網站，做為推廣雲端服務以及技術交流的平台。
- 推廣虛擬主機應用至彰化縣中、小學校，總共收容**173**間學校DNS主機，在完善網路安全設備的保護下，避免遭受網路DDOS攻擊。
- 利用VMware Horizon View建立4間雲端教室，根據不同的教學目標以及要運行的軟體環境需求，設計出不同使用型態的e化教室，提供老師教學及學生學習使用。
- 機房採用非侵入式負載監控技術進行用電趨勢分析，作為調整用電配置的參考。並將用電資訊利用MACD技術分析DIF與MACD曲線，根據兩種曲線的相互關係，可以提前預期機房設備故障發生。

# Dissemination of Energy Saving Cloud Management System in the Smart Green Campus and Its Affiliated Sites

Execution Unit

National Chung Hsing University Computer and Information Network Center

Project Director

Professor Chen Yu-Yi

- The implementation of this project focuses on the promotion of cloud services, extending its services to partner schools of TANet. At the same time in the virtual desktops infrastructure (VDI) and virtual software, based on the virtual machine (VM) to set up cloud service center, implementation of the school energy saving spindle goal. And in the green data center using related technologies to improve energy efficiency.

## VM service promotion

Campus cloud service promotion

2015	Add	26
2016	Add	59
2017	Add	147

Power saved per year. 406, kilowatt-hour

About **NT 1,219,392**  
Electricity fee

VM service promotion · Total 232.

## Cloud Classroom

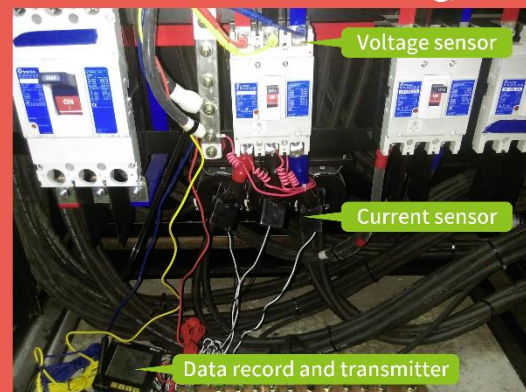
NEP II implement Virtual Desktop Infrastructure (VDI) at computer classroom

VDI extend the life of the computer...(Saving replacement funds.)



Use VDI technology to create 4 cloud classrooms that allow 200 users to use it simultaneously.

## Non-intrusive Load Monitoring, NILM



Using MACD technology to analyze the trend of electricity consumption in computer facilities, predict equipment failure in advance

- Held a number of cloud services promotion activities, and for various application requirements for technical guidance and education and training, thereby enhancing the user's willingness to use cloud services. So successfully promoted 59 VM as a number of applications.
- Establish a campus energy efficiency program introduction and results website, as a platform to promote cloud services and technology exchange.
- Promote the use of web hosting to primary schools and senior high schools in Changhua County, and accommodate a total of 173 school DNS hosts. Under the protection of the improved network security devices, they are protected from network DDOS attacks.
- Take advantage of VMware Horizon View to create 4 cloud classrooms, according to the different teaching objectives and the needs of the software environment to setup different types of e-classroom, for teacher teaching and student learning.
- Data center using non-intrusive load monitoring technology for power trend analysis, as a reference to adjust the power configuration. And the use of electricity information using MACD technology analysis of DIF and MACD curve, according to the relationship between the two curves, you can anticipate the engine room equipment failure occurred.