A global approach for a Sustainable ICT

ITU green standard week

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The Challenge

- Reduce the energy consumption to reduce the impact on climate change.
- Give the possibility to use ICT service everywhere to every one

The Solution

- Efficient solution for ICT and Simple system dedicate to rural areas

The SDO contributions

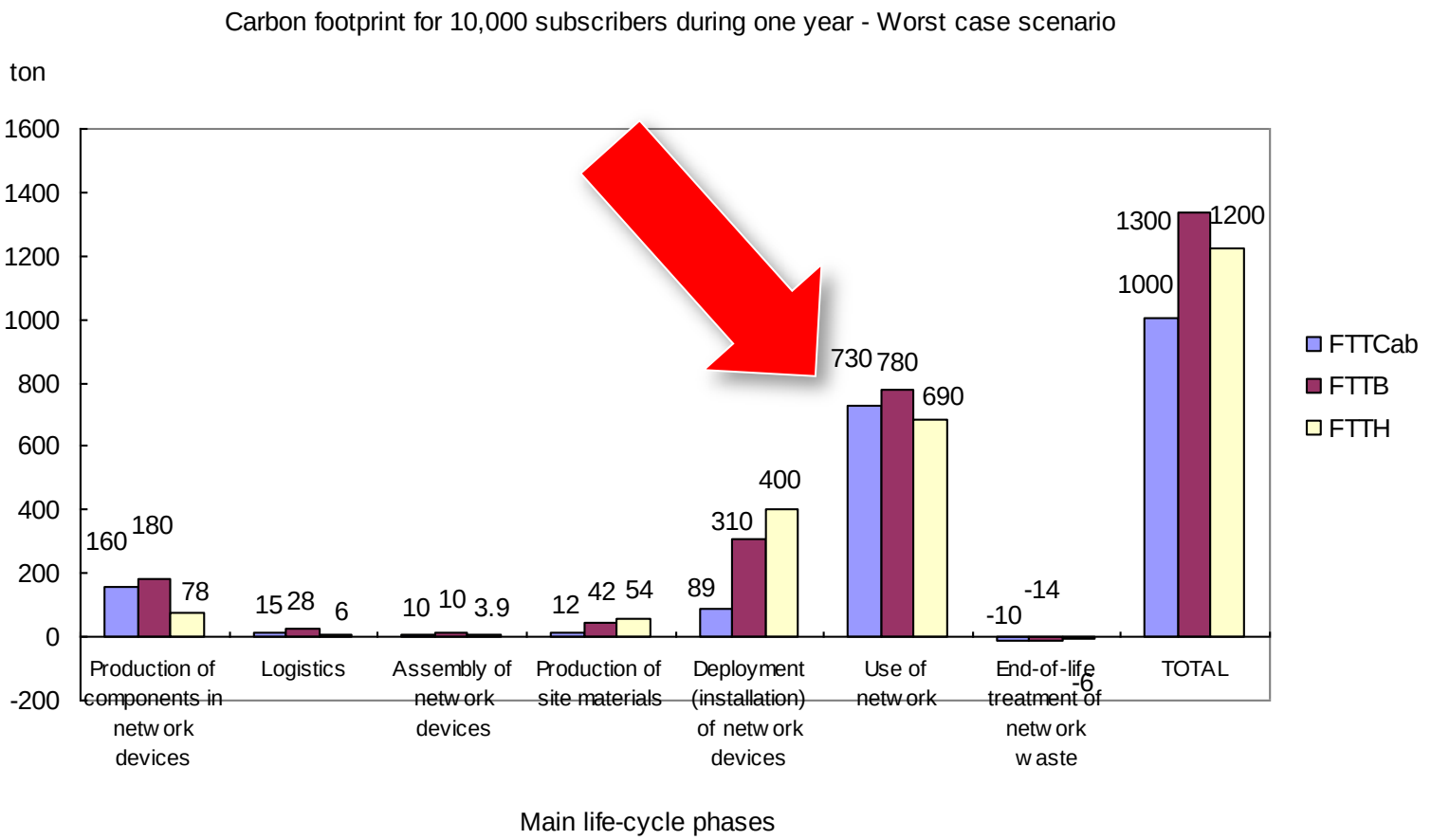
- Standard on equipment power/energy consumption
- Standard on impact of equipment System (LCA… Methodology etc.)

Agenda

- Different impact factors
- Solutions
- Our contributions

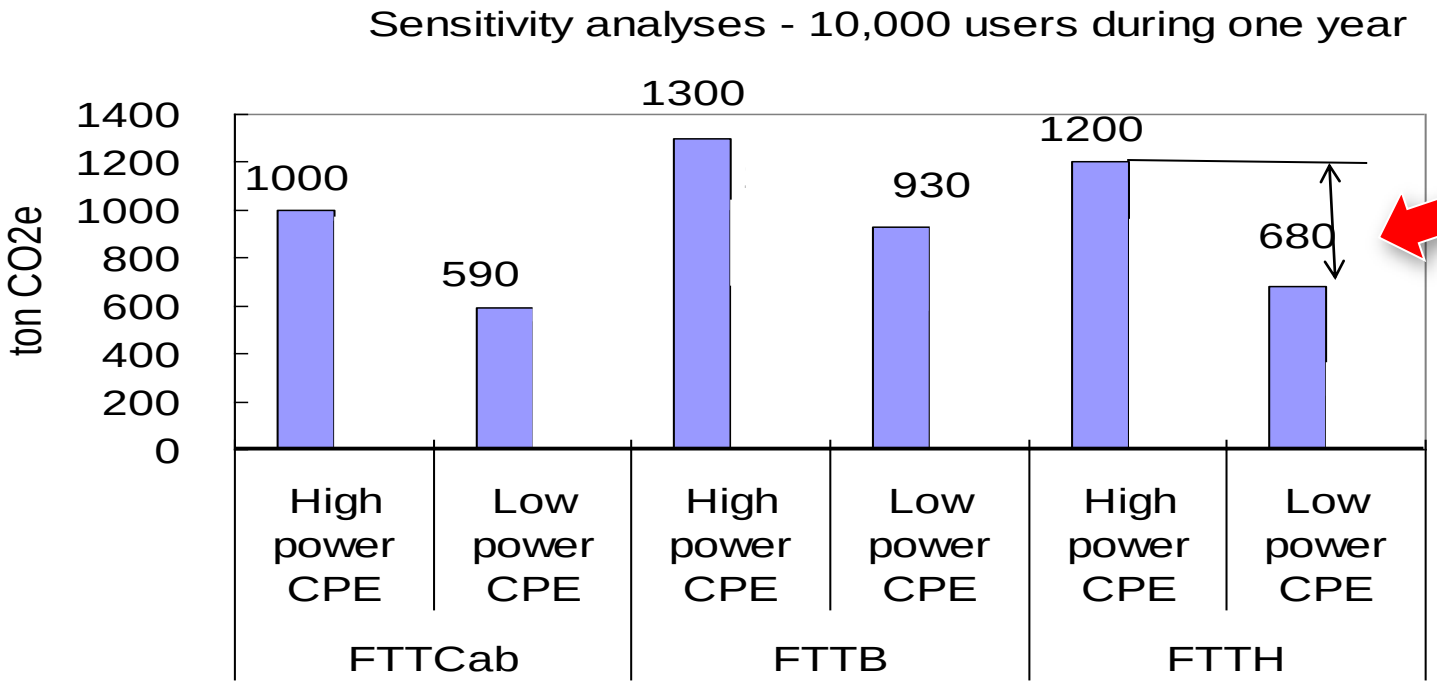
The impact of a system during the life Cycle

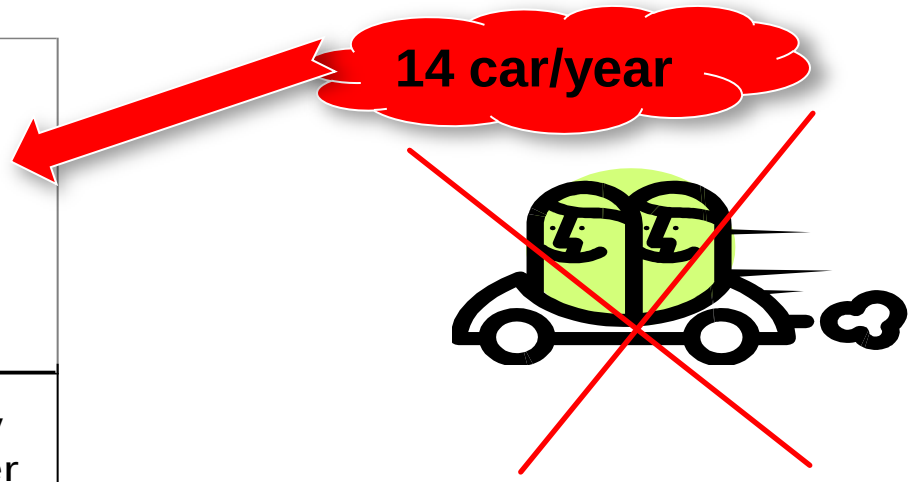
- Clearly the major impact is during the use of the network
  - The energy used to give a service is more than 50% of the total impact.



- Carbon footprint of next generation fixed networks. Gianluca Griffa, Lorenzo Radice, Claudio Bianco ,Anders Andrae, Zhu Bin, Han Dong, Paolo Gemma, Luo Shudong Intelec 2010 Orlando

The influence of low power mode





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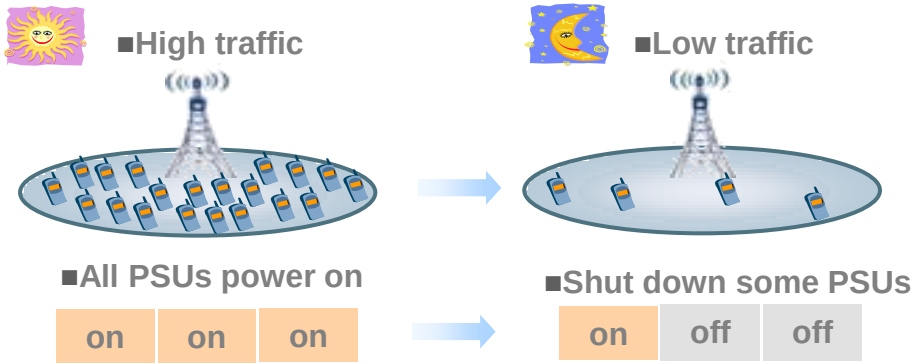
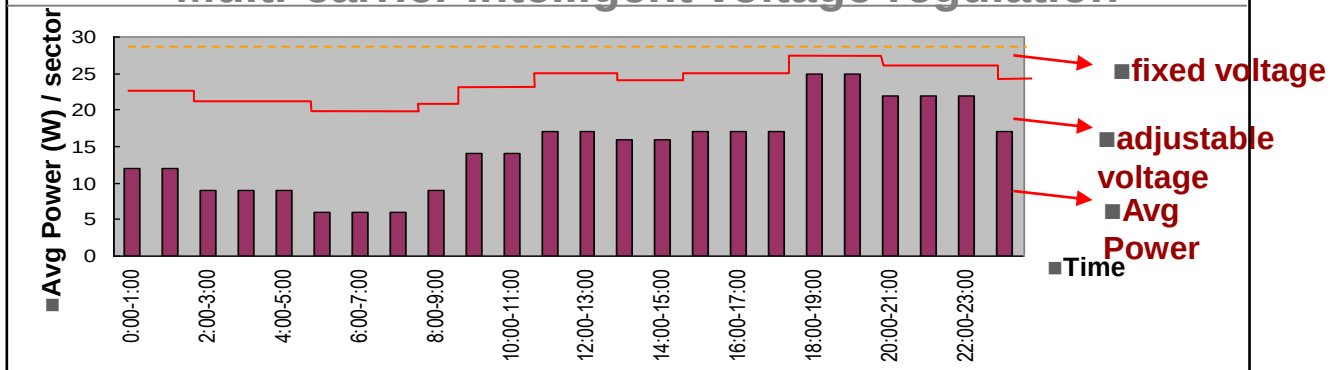
Wireless system possibility

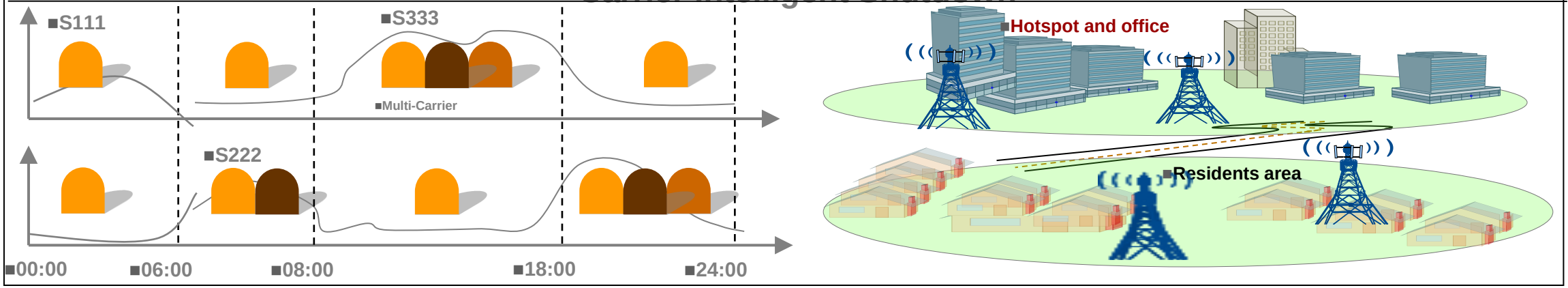
■PSU smart control



■Multi-carrier intelligent voltage regulation



■Carrier Intelligent Shutdown

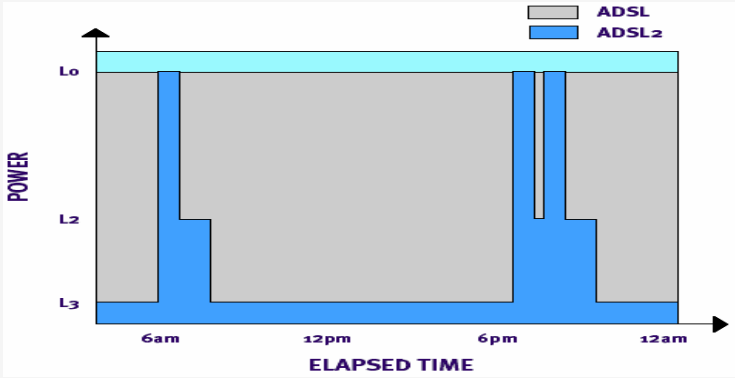


These features are applicable for GSM and UMTS

Fixed access system possibility

Advanced ADSL2+ L2/L3 Low Power Mode

- L2 mode can reduce power consumption by 30%~40%
- L3 model can reduce power consumption nearly to 0. But still under standardization because the crosstalk problems



- L2 mode implementation can save about 11.7 kWh for day for equipment (1024 ports)
- about 4 Mwh in a year about 2 tons of CO2

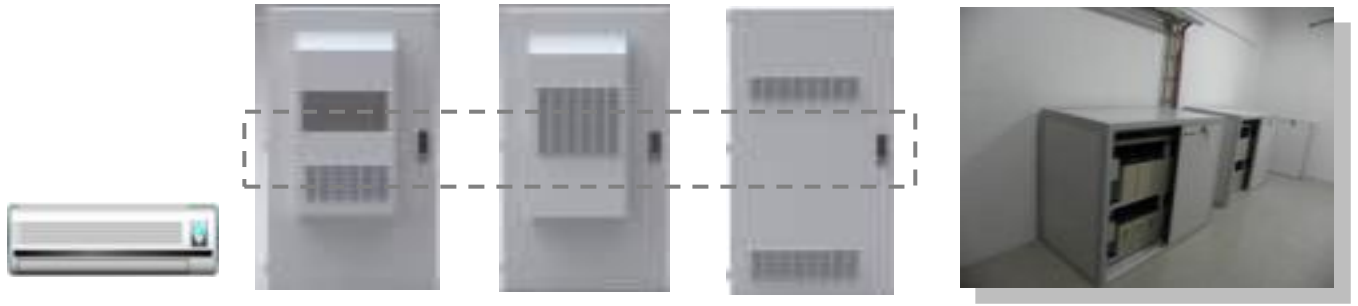
VDSL2 low power

?

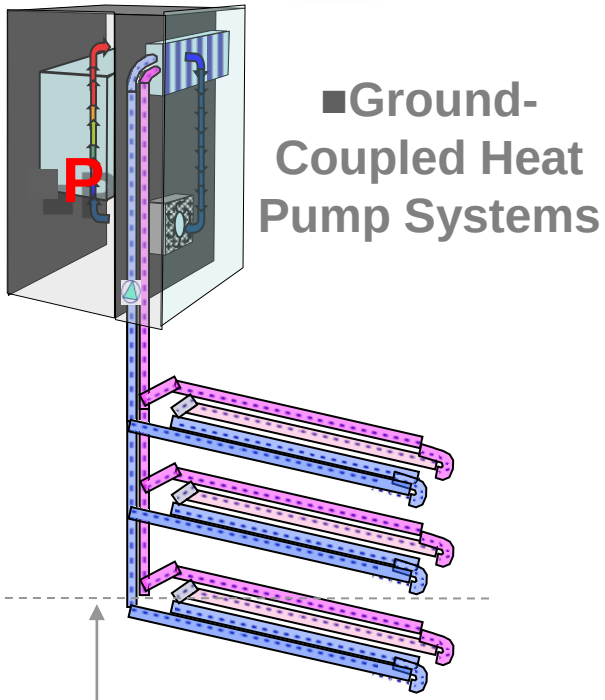
Infrastructure solution

■Cooling Solution for Different Scenarios

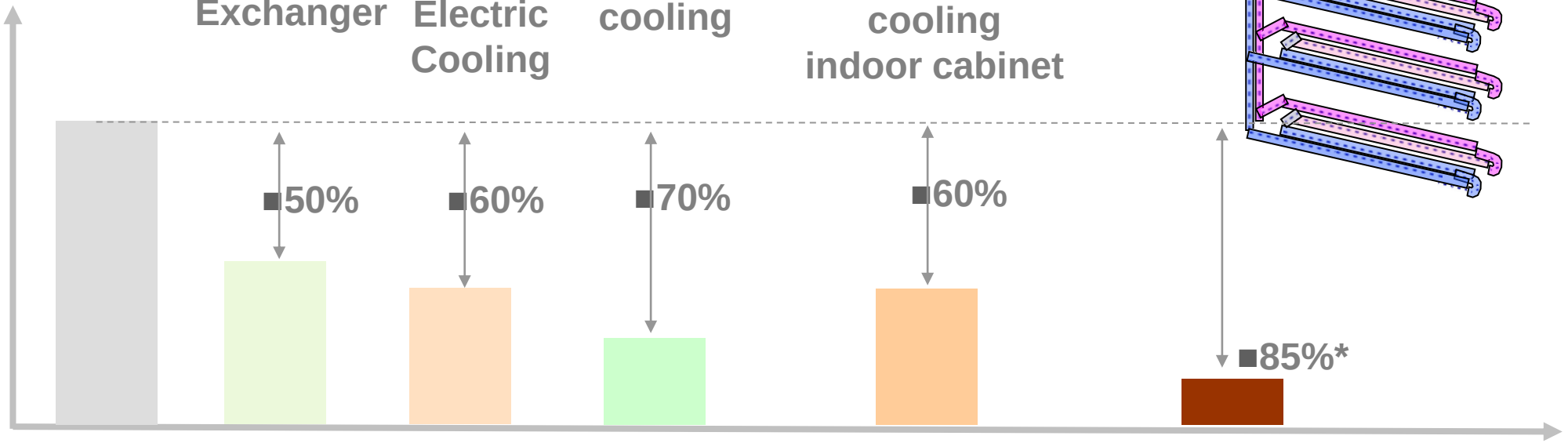
For 1 kw site save
4 kwh/year



■Air-con ■Heat Exchanger ■Thermal Electric Cooling ■Free cooling ■Battery cooling indoor cabinet



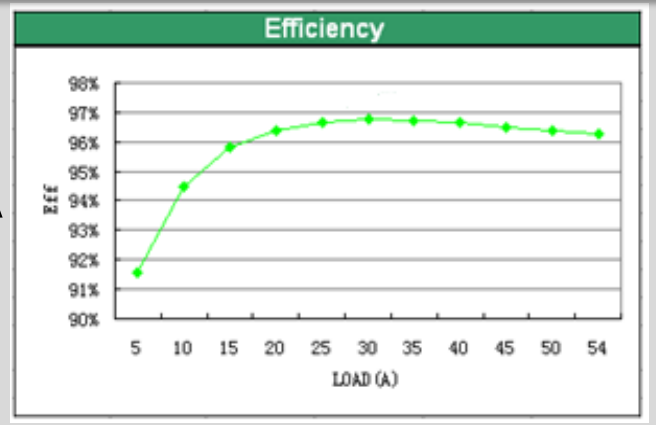
■Ground-Coupled Heat Pump Systems



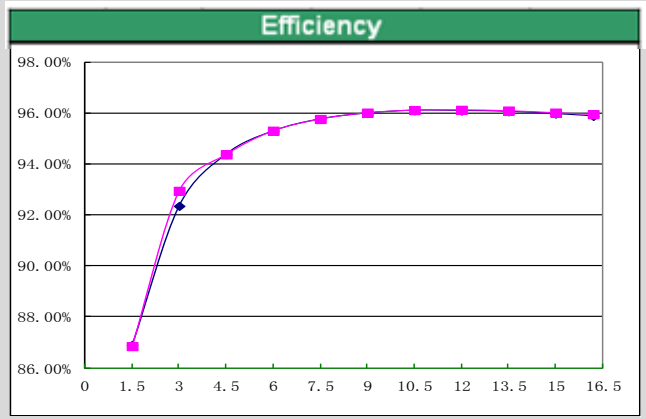
Higher Efficiency power station

■Efficiency curve of rectifiers

■50A



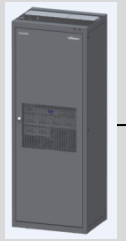
■15A



■Customer benefit

■Heat emission (4%)

■High efficiency i power supply



■Output >96%

■Load

■88%

Replace with

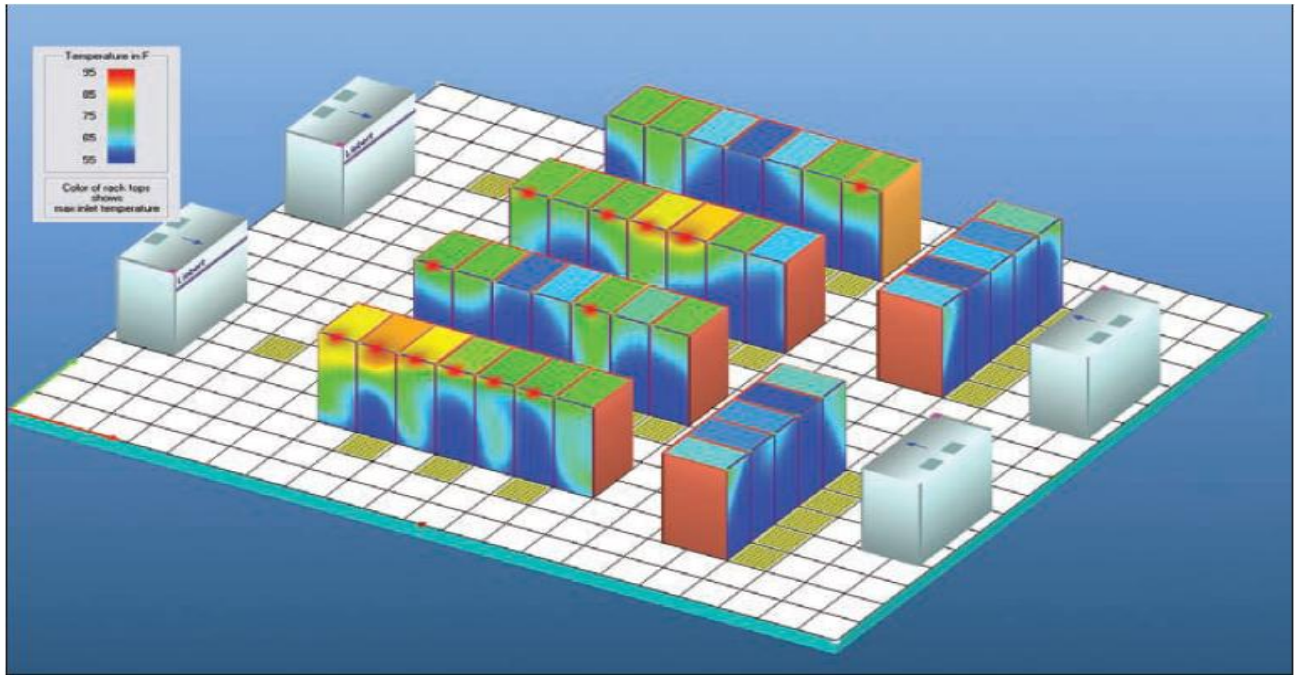
■Max 96.8%

■Energy consumption of a 3KW site each year (KWH)

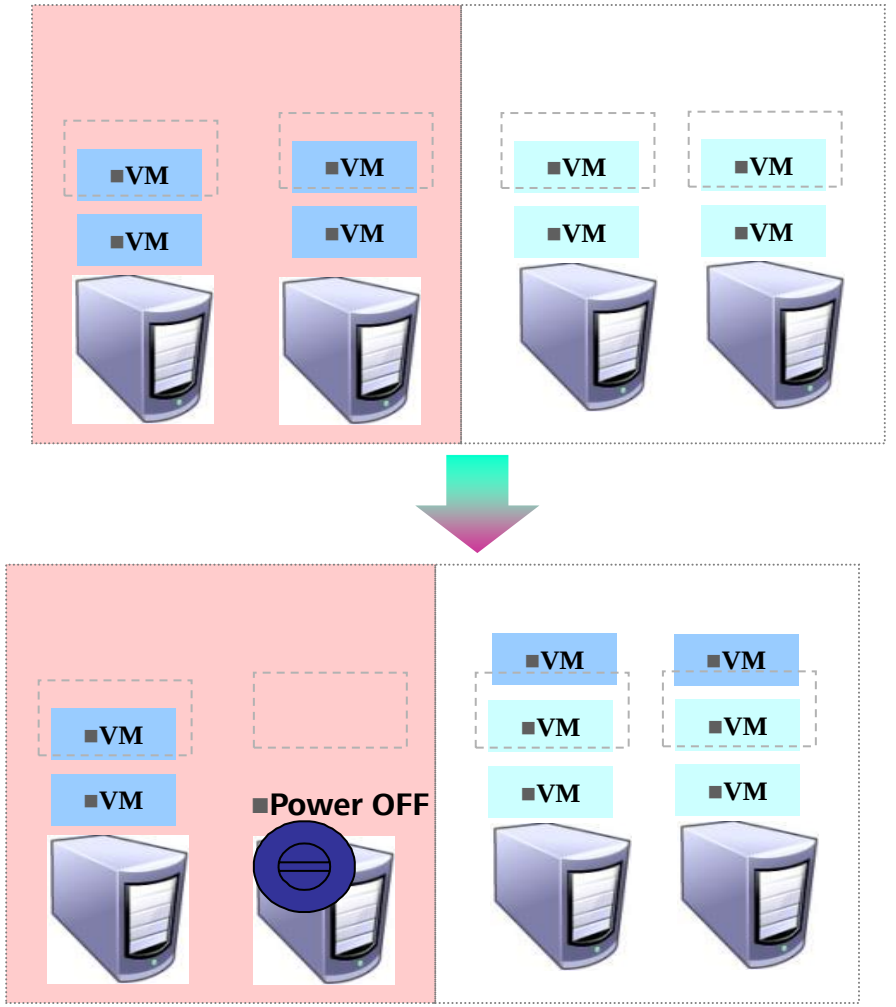
Consumption in total	Energy loss	88% power energy loss	saving
32850	1314	6570	5256

Reducing 80% energy loss

Dynamic DC management to avoid hot spot



■Temperature in a data center is NOT balanced



- In the DC Facility, the node in area possess different cooling condition.
- VM can be moved from the PM of **heat hotspot**, result in balanced cooling level and **higher working temperature**, thus lower PUE
- When all VM of certain PM being moved to other PM (without hotspot), that PM can be **power off** to improve the power efficiency.

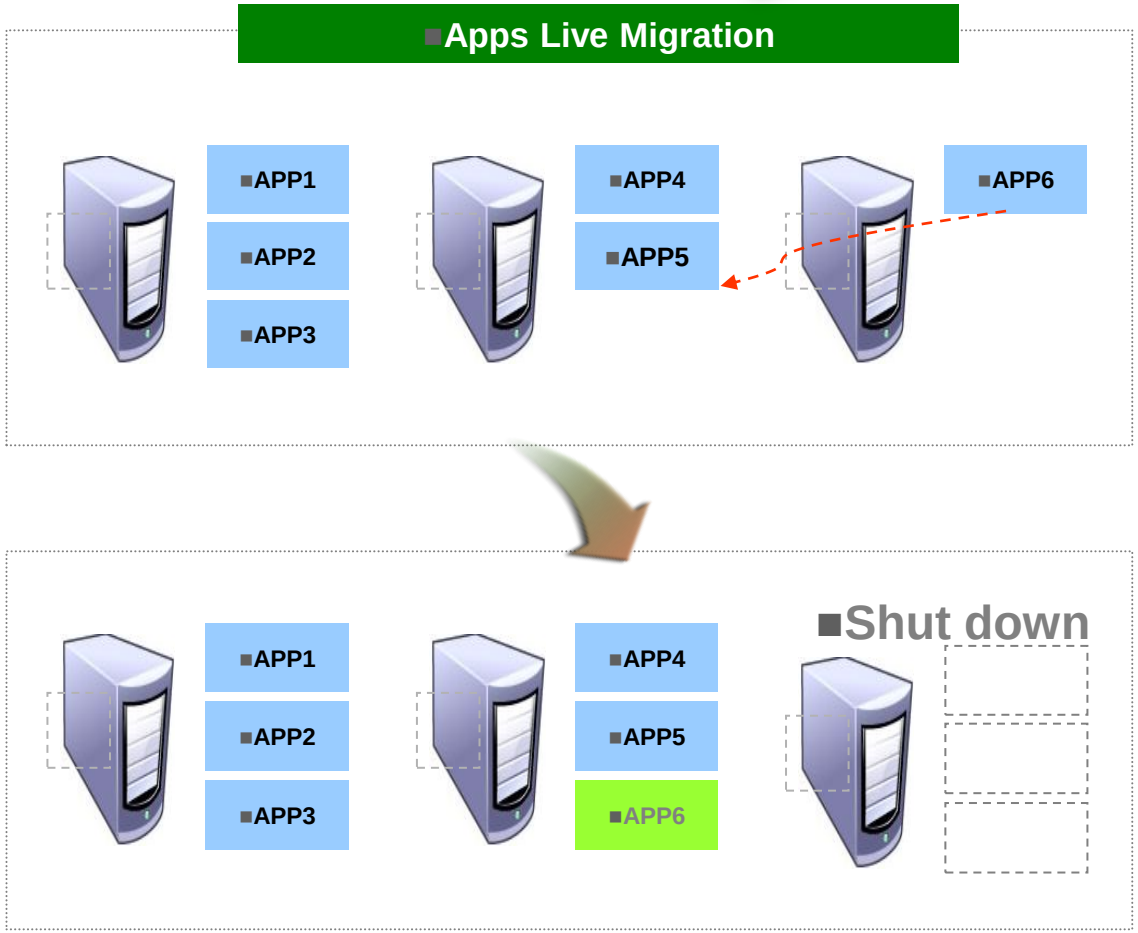
*** VM: Virtual Machine**

Apps live migration technologies

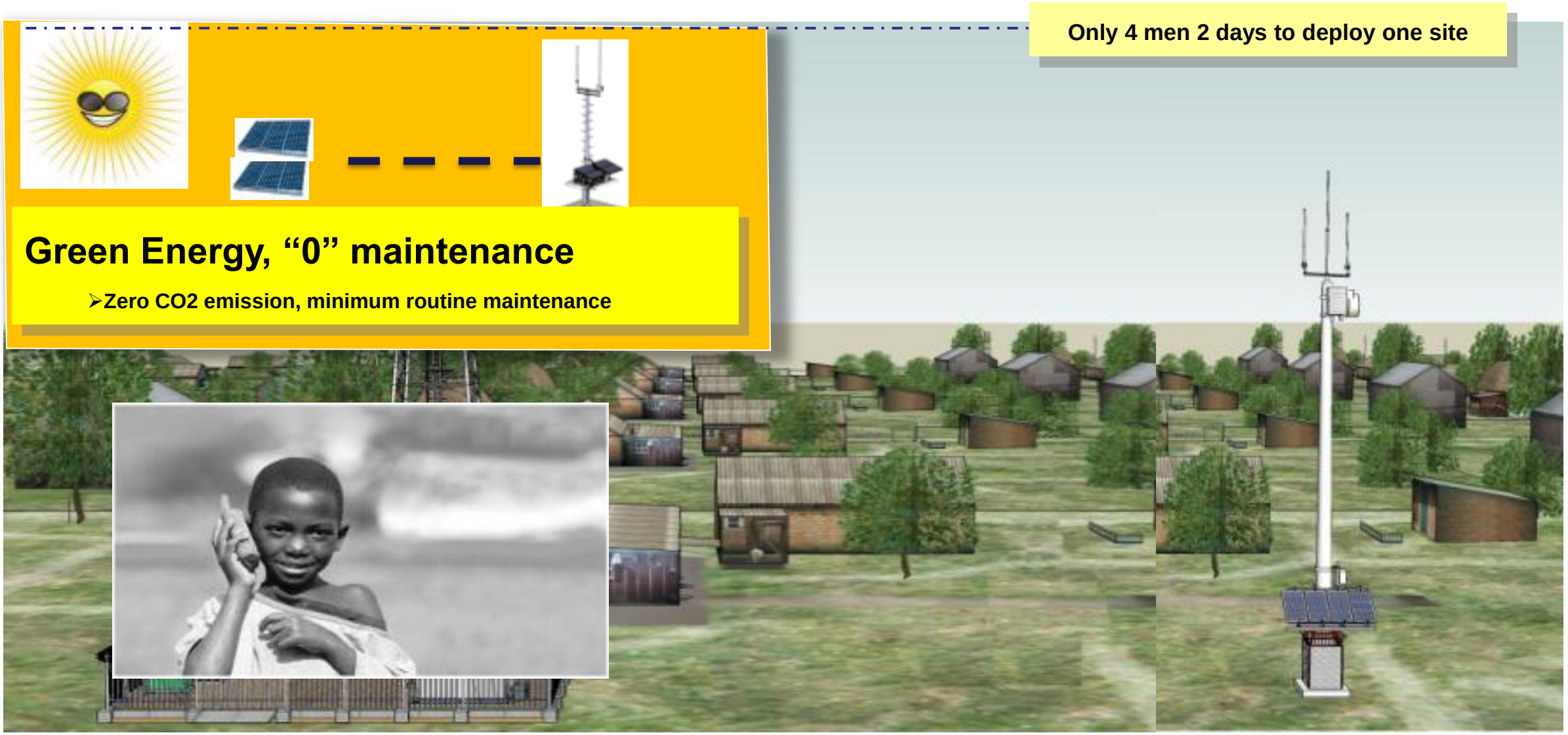
0.26 tonns CO2

1. All apps can be migrated lively ,including VMs.
2. Live migration must happen in same cluster.
3. Each DC support 1024 clusters.
4. One cluster has **1024** nodes maximally.

1. Live migration time: shorter than 35 seconds.
2. Service broken time: shorter than 300 milliseconds.



Simple system for rural areas



Only 4 men 2 days to deploy one site

Green Energy, “0” maintenance

- Zero CO2 emission, minimum routine maintenance

Agenda

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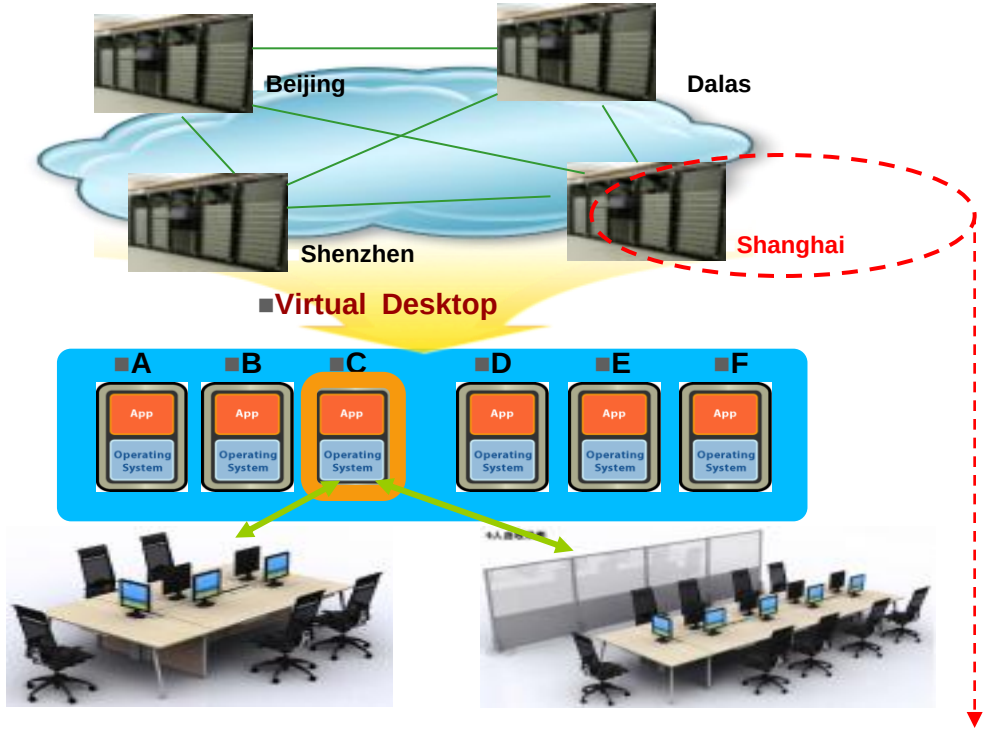
The need of standardardization

Huawei reduce hits footprint

■Virtual Desktop Cloud in Huawei

■Project Plan

- 2009.10: 400 staff on trial
- 2010.5: officially 8K R&D staff at Shanghai center are moved to virtual desktop
- 2011 & beyond: move all 60K R&D staff around the globe from PC to virtual desktop



■Overall Objectives

	Tradition	Cloud Based NC	Improvement
Computer #	10000 PCs+ 100 CI servers	390 servers+10000 TC	40% on CAPEX
CPU Utilization	<5%	>60%(VDI+CI)	10x
Power Consumption	78MW	22MW	71%
Hardware Preparation Cycle	>3 months	<1 month	30%
Maintenance efficiency	<100 /person	>1000 /person	9x

Be one small piece of puzzle for earth preservation

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