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Aligned with China's 12th Five-Year Plan, support development of data centres in Hong Kong

配合中国的「十二·五」规划，支持香港发展数据中心



China's 12th Five-Year Plan (2011 to 2015) endorses the development of the "Six New Industries" in Hong Kong. The Plan affirms the Central Government's stance in supporting Hong Kong's further development. This is a confidence booster for high value-added services industries such as financial, logistic and information services in Hong Kong.

According to 2009's data, the combined value of banking, financial and insurance services, logistics and transportation accounted for 42% of Hong Kong's GDP. Moreover, these sectors together represented 52% of the total demand for data centre space. Therefore, the data centre industry plays a key supporting role in different perspectives. In order to continue to support the above mentioned services, the data centre industry must develop further in Hong Kong, especially in the provision of stock transactions, e-commerce and cloud computing.

Hong Kong is in an advantageous position to become a data centre hub. Its competitive advantages include its immediate vicinity to the Mainland, a favorable business environment, political stability, a highly transparent and independent judicial law system, comprehensive legal protection of privacy, stable supply of electricity, advanced telecommunications infrastructure, as well as low natural disaster risks. With cloud computing fast gaining popularity, Hong Kong should be strategically directed towards becoming a forefront data centre hub. The Hong Kong SAR Government may consider increasing land supply for the building of data centres, putting more resources to widen and deepen the relevant talent pool, implementing more effective marketing strategies and exploring measures that can attract more international companies to set up branches and data centres in the territory.

The potential growth in demand for data centre is exceptionally strong. Studies have shown that Hong Kong will need 1.8 million sq. ft. of raised floor space by 2015 to meet the building requirements of data centres. Among this, 0.5 million sq. ft. will be used for building high-end data centres. However, it will take up about 10 hectares of additional land in the support of building high-end data centres. Although the Hong Kong Science and Technology Parks Corporation approved about 8 hec. of land located at the Tseung Kwan O Industrial Estate for the development of high-end data centres, the problem of land shortage persists since each high-end data centre needs about 2 to 3 hectares of land. Such an issue should call for the increase of land supply by the SAR Government for the development of data centres so that the industry can sustainably move forward.

在国家的「十二·五」规划(2011年至2015年)纲要草案中已落实支持香港发展六大产业，这肯定了中央政府對香港的支持，為香港在發展金融、物流、信息服務、以及其他高附加值的服務行業注入了一支強心針。

于2009年的数据显示，银行、金融和保险服务、物流和交通运输占香港的国内生产总值达42%，而这些行业共占数据中心空间的总需求达52%。由此可见，数据中心能在各方面发挥关键的支持作用，因此为了继续支持这些行业，特别是高频股票交易、电子商务和云计算服务，香港必须进一步发展数据中心。

香港具备成为数据中心枢纽的条件，包括毗邻内地、良好的营商环境、政局稳定、高透明度及独立的司法体系、完善的个人隐私保障法则、电力供应稳定、电讯基础设施建设完善、以及自然灾害风险低等。配合云端运算 (Cloud Computing) 的发展，香港应发展成为数据中心的枢纽。香港特区政府可为数据中心的发展增加土地供应、培训更多人才、加强市场推广，以及探讨措施吸引更多国际公司落户香港，设立数据中心。



数据中心的需求有强劲的增长潜力，研究显示，直至2015年为止，香港将多需180万平方英尺的活动地板空间 (Raised Floor Space) 以符合所有数据中心的建造需求，其中50万平方英尺将被用作建设高端数据中心。然而，建设高端数据中心额外所需的土地约为10公顷。虽然在过去一年，香港科技园公司批出位于将军澳工业邨约8公顷土地用作发展高端数据中心，但由于每个高端数据中心约需2-3公顷的土地，因此香港建造高端数据中心仍然要面对土地供应严重不足的问题，这个问题还需要有关部门积极考虑，提出具体土地解决方案，使数据中心在香港能持续发展。

A comparison of Static and Dynamic Uninterruptible Power Supply

比较静态和动态不间断电源系统

Static Uninterruptible Power Supply (UPS) and Dynamic Uninterruptible Power Supply (UPS) are the two most common UPS technologies nowadays. In terms of functionality, the two are the same; yet, they are rather different when it comes to return on investment, installation and environmental friendliness.

Let's talk about return on investment first. Dynamic UPS requires the purchase of the whole set of system components at the time of initial installation. Therefore, installing Dynamic UPS requires a considerable sum of initial investment in hardware. The average cost of operation in the long run, nevertheless, decreases with time because no additional components will be needed in the future. On the other hand, extra components can be added to a Static UPS system on demand, giving the technology more flexibility in capital investment and operation. But adding components and replacing the batteries will mean further costs.

Dynamic UPS is larger than Static UPS in size, so it requires more space for storage. However, Dynamic UPS comes with backup generators and batteries, which is a plus. As for Static UPS, it is smaller, so the user can conveniently have it placed along other facilities in the data centre. But it requires the setup of additional battery rooms and air-conditioning systems. Dynamic UPS and Static UPS have their own advantages and disadvantages and it is hard to arrive at an absolute conclusion.

Lastly, which one is greener? Dynamic UPS yields the advantage of high performance so it can effectively reduce power consumption and carbon footprints. Moreover, Dynamic UPS does not require frequent battery replacement, which favorably results in less disposal of used batteries and less damage to the environment. But compared to Static UPS, it produces more noise when running. This may lead to noise pollution.

An important point to note is Dynamic UPS is more suitable for use in data centres with extra high power consumption. To select the optimal UPS system, we must first understand the data centre configurations, and then analyze the pros and cons of the two forms of UPS in the given setting.

Figure 1 below shows a comparison of Static UPS and Dynamic UPS



在现今的市场上，不间断电源系统主要分为静态 (Static UPS) 及动态 (Dynamic UPS) 两个类别。虽然两种不间断电源系统的功能一样，但当中存在着差异，包括投资、安装和环保三方面。

先说投资。由于动态不间断电源系统一开始便需购买整套组件，因此若决定购买动态不间断电源系统，必须预先投放一笔资金。但长远而言，由于动态不间断电源系统具备高效率运作及不需在日后添加组件等优点，所以长远的平均成本会减低。相反，静态不间断电源系统可因应日后的需要再增加组件，在投资和运作上较有弹性，然而，其成本会因增加组件和更换电池而上升。

安装上，动态不间断电源系统比静态不间断电源系统的体积大，因此需要将动态不间断电源系统存放在较大的房间，但它的优点是已包含后备发电机组、不间断电源系统及电池。至于静态不间断电源系统，它的体积相对较小，可以与其它机器一同放置于数据中心内，但需要另外兴建电池房及配备空调系统。所以，两者在这方面可谓各有优劣，难分高下。

至于环保方面，动态不间断电源系统所发挥的高效率运作能有效地降低能源消耗，以及减少碳排放。此外，由于动态不间断电源系统不需要经常替换电池，因此能减少因弃置电池而造成的环境污染。但是，动态不间断电源系统运行时发出的声音较静态不间断电源系统嘈吵，容易导致噪音污染。

总括来说，静态不间断电源系统配备较适用于耗电量较低的数据中心，而动态不间断电源系统则较适用于耗电量特高的数据中心。要选择一种合适的的不间断电源系统，您首先要了解数据中心的限制，再比较两种不间断电源系统在指定环境中所能发挥的绩效，以作出最佳的决定。

以下图一显示静态和动态不间断电源系统的比较。

500KVA		1,000KVA		1,300KVA		2,000KVA	
Cost drives Static 选择静态不间断电源系统 较符合经济效益				Dynamic UPS 动态不间断电源系统			
				Cost-Performance Trade-off 权衡两者之间的成本效益			
Static UPS 静态不间断电源系统		Static UPS 静态不间断电源系统		Cost drives Dynamic 选择动态不间断电源系统 较符合经济效益		Cost drives Dynamic 选择动态不间断电源系统 较符合经济效益	
small 低	Mid-Range 中	Large 高		Mega 特高			
500KVA		1,000KVA		1,300KVA		2,000KVA	

Figure 1: Comparison between Static UPS and Dynamic UPS
圖一：靜態和動態不間斷電源系統的比較