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SUNIX
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Can Change
The World's
Business.

INDEX

You and I,
Can change the world's business!

DevicePort® 〈Dock Mode〉

DevicePort® 〈Advanced Mode〉

DevicePort® Solutions Product Family

You and I,
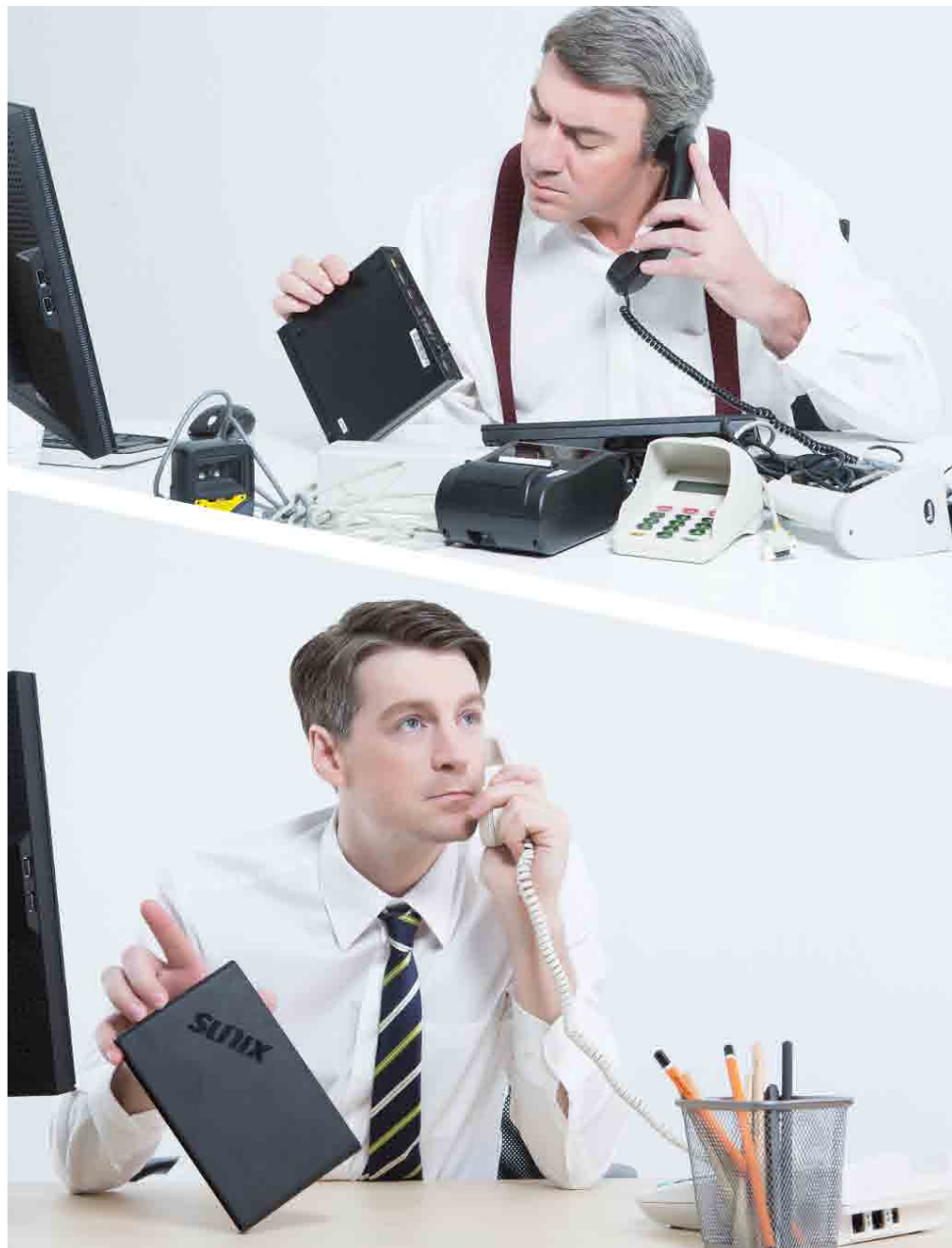**Can change the world's**
business!

Daniel is a pre-sales engineer at a technology company. Alex is a post-sales engineer. Their company like other IT companies is facing unprecedented changes and challenges as PC and NB are being replaced by tablets and smartphones.

Are you ready to change the world's business with us together?

DevicePort® 〈Dock Mode〉

Issues and Solutions for All-in-one PC

Daniel received a call from customer Bob, who is a pre-sales engineer for an SI company and being worried about one problem that his bank client wants to order bank front desk computer system from him with the following requirements:
 (1) Small size, take minimal desk space.
 (2) Low energy consumption (~125 W), in compliance with global trend in green environmental protection, energy saving and carbon reduction, and electricity saving.
 (3) Computer needs to connect to customer-required serial devices like password keyboard, printer…etc.

Because front desk space is limited, Bob would like to recommend new TINY PC, which is All-in-one PC.

Advantages of All-in-one PC:
 (1) Small size (presently around one liter).
 (2) High energy efficiency (usually around 125W).
 (3) Easy for mass production, unified inventory, low cost, unified interface specifications (only USB and RJ45 exist).

Top: Bob is having a hard time to figure out a solution for I/O expansion on a Tiny AIO PC for his client
Bottom: Daniel is trying to find the best solution while listening to Bob's problem over the phone

However, All-in-one PC only has USB and RJ45 ports, so user cannot expand connection to the I/O Interface ports (such as serial port, parallel port, digital signal input and output control port DIO, linear signal input and output control port AIO, PS 2 signal port, cashier drawer control port...) for other devices.

Issues with All-in-one PC:
 (1) PCB size is small without standard PCI or PCI-e slot.
 (2) TINY case volume is around one liter, without room for expansion cards.
 (3) Considering power consumption, cost and product unification, there are only USB and RJ45 interface ports.

Inside All-in-one PC case there is no PCI or PCI-Express slot. Even there is Mini PCI-Express slot, user cannot disassemble the case to install Mini PCI-Express interface card. Because All-in-one PC assembly is very sophisticated, it is very difficult to disassemble it by non-professional. Besides, once it is disassembled, system manufacturer will not void warranty and refuse to repair it.

Solution (1)
for All-in-one PC Expansion Interface ~
Use USB for Expansion.

Bob thought about using the USB port from All-in-one PC to expand I/O interface. But there are not many USB interface converter cables in the market. It is only common to see USB to one serial port or one parallel port.

USB interface converter cables from the market:
(1) Converter cable for USB to one parallel port
(2) Converter cable for USB to one serial port

Although Bob felt USB interface converter cable was fairly cheap, he also understood there were the following issues with USB interface converter cable:

Issues with USB interface Converter Cable Issues:
(1) It is unable to meet the various needs of different interfaces and multi-ports: USB interface converter cable has only a single serial or a single parallel port, unable to meet the common market need for 1 ~ 64 ports. In the example of this bank, the front desk needs password keyboard to access the serial port, bank card reader, printer... etc., and each device requires at least more than four serial ports.

Bob is puzzled over USB solution even going with USB is a less expensive solution

Besides, the interface desired by the market is not just a serial or parallel port; instead, it includes those such as integrated serial and parallel port, digital signal control DIO interface, linear signal control AIO interface, PS 2 signal control interface, cashier drawer control interface...There are a wide variety of interface converters desired by the market. They could generate hundreds of different combinations, which USB products are not yet currently available.

(2) Serial driver is not complete: the biggest problem with USB interface converter cable (a single serial port or a single parallel port) is that the IC driver does not completely meeting legacy specifications. Since IC manufacturers and developers position USB in consumer product category, rather than industrial or commercial product category. Therefore, developers do not fully understand the behavior of serial port and do not have enough professional expertise, either. This is the reason why all current USB interface converter cables with serial ports often have serious problems in industrial or commercial applications. It is the lack of understanding of converting control process as IC driver operates on USB interface for conversion between serial port signal and USB signal.

(3) USB interface converter cable consumes lots of CPU resources: Bob ever used performance analysis program to test USB to 4 Port RS-232 and found 93% CPU resources were taken. Almost entire system resources were consumed on USB to 4 Port RS-232. As a consequence, system peripherals (such as: HDMI/DP/VGA graphic card, SATA hard disk drive…) would have issues with operation efficiency. This is mainly because USB data transmission framework always uses CPU to transmit and receive data and convert data format. This consumes a great deal of CPU resources. If USB interface converter cable is used, the system efficiency will be extremely poor.

(4) For data security (e.g. bank does not allow employees to copy customer information from USB port), some clients disable USB port communication from BIOS settings.

(5) USB is the user interface for consumers. While people enjoy the convenience of hot plugging, thoughts should be put on its downside of data security issue.

Therefore, Bob finally decided not to use USB interface converter cable even though its price was low. If USB cable was not to be used, what could be used for bank equipment? Bob was thinking hard about how to expand All-in-one PC port?

RJ45

Ethernet

All-in-one PC

DevicePort〈Dock Mode〉

Serial port	Parallel port
Digital signal port DIO	Linear signal port AIO
PS 2 signal port	Cashier drawer control port

Solution (2)
for All-in-one PC Expansion Interface ~ SUNIX DevicePort (Dock Mode)

Daniel introduced SUNIX DevicePort Dock Mode to Bob in the call. Since SUNIX DevicePort used Ethernet to convert and extend customer-needed various kinds of interface ports (such as serial port, parallel port, digital signal port DIO, linear signal port AIO, PS 2 signal port, USB signal port, cashier drawer control port etc.), we called DevicePort "Network interface expansion box", which can accommodate various types of interfaces in the same box (such as: integrate serial port and parallel port as one port in a multi-functional box).

Bob was very pleased to hear that because All-in-one PC had ethernet ports that can be converted to bank desired multi-serial and multi-parallel ports. He decided to order four-serial-port DevicePort (Dock Mode) to expand the serial interface for All-in-one PC into four serial ports to connect to password keyboard, bank card reader, printer…etc. on bank front desk.

DevicePort can easily provide a vast variety of expansion options

SUNIX also had a type of serial DevicePort with power supply with a big advantage that it provided power source to the equipment on bank front desk (password keyboard, bank card reader, printer…etc.). Therefore, the installation became a lot easier because all the equipment on bank front desk did not need additional power source and wiring work.

But Bob though about one problem? The ethernet port on All-in-one PC was taken. How would All-in-one PC connect to Internet? Daniel assured Bob that because DevicePort had two ethernet ports, one Upstream and the other Downstream; even though DevicePort took one network port from All-in-one PC, there was another network port available from All-in-one PC.

- Ethernet
- Serial Port

All-in-one PC

DevicePort
〈with power〉4S

LED screen　　Card reader　　Password keyboard　　Bill counter
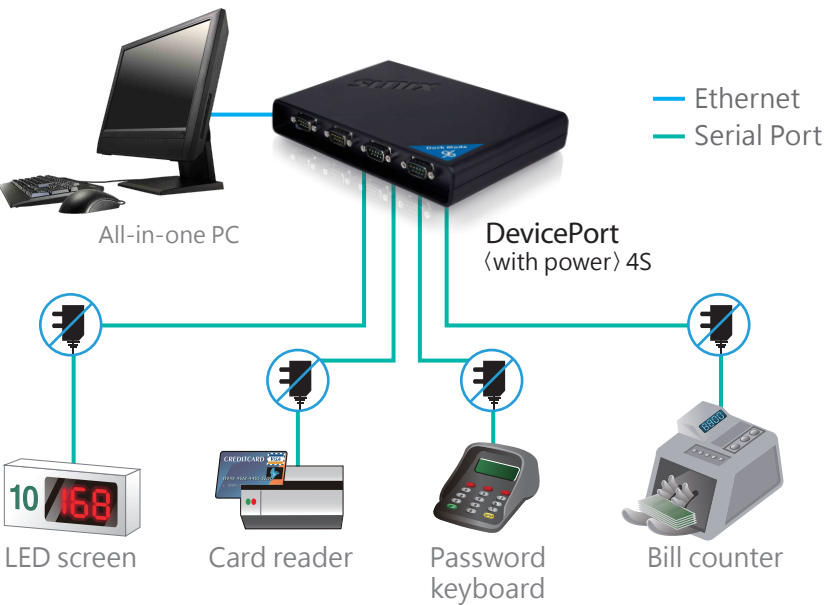
Structure diagram of All-in-one PC and external serial, parallel equipments of bank

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　DevicePort Dock Mode

Customer Concerns ~
Complicated Installation and
Setup Procedures for Network Equipment

Bob used e-commerce system to place an order to Daniel's company. Such B to B or B to C business model was very different from the traditional ones. He soon received the DevicePort (Dock Mode) from the courier. However, B to C business did not offer delivery and training by post-sales engineer and salesperson. So Bob was very worried that he could fail the project because he did not know much about the complicated installation and setup procedures for network equipment. He knew how to install the interface card before, but current Tiny computer did not have room for interface card. He ever used USB to RS-232 cable, a Plug and Play type. But USB was not suitable for commercial I/O device expansion. Tiny was suitable for I/O device expansion on network equipment such as DevicePort. But network equipment needed to set up IP. There were complicated installation and setup procedures. He did not have much of the knowledge.

Therefore, he called the post-sales engineer, Alex.

Bob is very happy to receive SUNIX DevicePort so quickly from delivery man.

SUNIX

SUNIX DevicePort with Amazing "Plug and Play" Installation

Alex told Bob not to worry about the installation and setup procedure for SUNIX DevicePort network product, because DevicePort had the Plug and Play installation mode for user without needing manual installation. Its network configuration was easier. There was no cumbersome and complicated network settings, and no issues with IP conflict and distribution.

After Bob heard the explanation, he plugged the DevicePort (Dock Mode) and immediately learned it was just as easy as USB plug and play mode, extremely simple and convenient. Users could instantly install and use it without help from MIS personnel.

Bob was pleasantly surprised because after installing the drivers, DevicePort was connected to Ethernet and was "Install Finish"

SUNIX

Bob was incredibly satisfying by the performance of SUNIX DevicePort.

Customer Concerns ~
Compatibility between Customer Application Software and Interface Driver

After Bob installed All-in-one PC and DevicePort (Dock Mode), the next thing he worried about was whether it would be compatible with bank application software? Whether he needed to modify application software? Whether the serial devices on the front desk like password keyboard, bank card reader, printer…etc. could function well?

After Bob installed front desk software, he used DevicePort (Dock Mode) to connect serial password keyboard, bank card reader, printer…etc., and then found the expanded COM port from DevicePort was fully compatible with bank application software and immediately ready to work, and he did not need to modify the application software or system configuration.

Bob was very satisfied with the result.
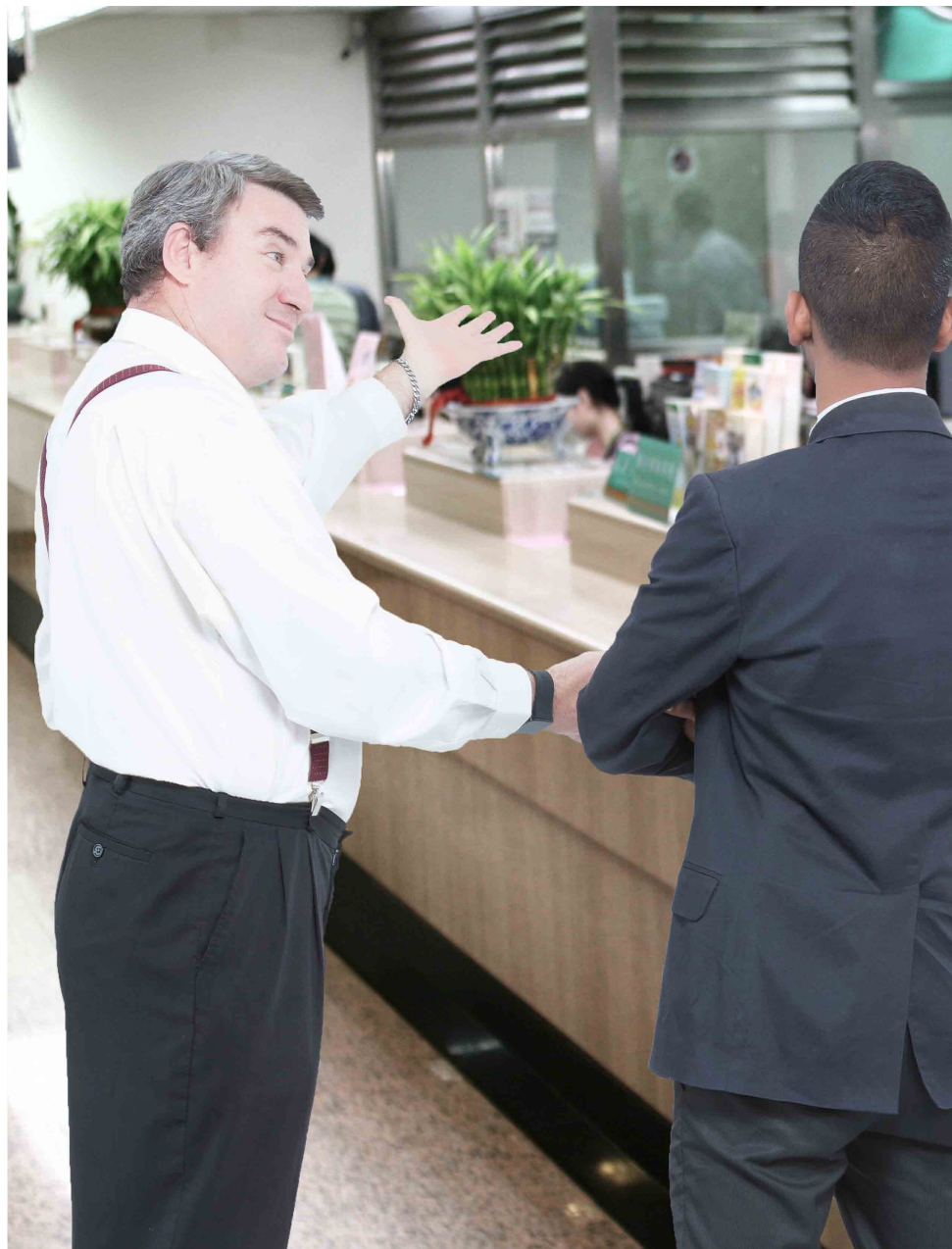
Bob proudly to show how to achieve counter system with DevicePort in a short time to bank manager, Mark.

Customer Concerns ~
Troubles with a Large Number of Computers and Peripherals

After Bob installed the DevicePort and tested bank application software by himself, he called MIS Department manager Mark. Bob talked proudly in the call. After the call, Mark immediately decided to have Bob to come to the bank to install the computers and peripherals and run the test.

Mark reminded Bob that the bank would not allow service interruption by upgrading front desk system for two or three days. Mark told Bob that Bob only had one night to install twenty or so front desk computer systems. After hearing it, Bob did not seem to worry about it, but only smiled with confidence.

Because DevicePort installation was Plug & Play and it automatically detected mapped ports and parameters, Bob spent less than two hours to complete the DevicePort installation with port number adjustable. Bob told Mark that DevicePort had initial default settings, so the installation was very quick.

Mark was amazed by that the entire network configuration and operation was normal and IP did not have any conflict. He asked Bob how he did it. Bob told Mark that because DevicePort could transmit data through Ethernet there would not be IP conflict, and it was different from many network serial products in the market. Mark was very satisfied by the result.

Bob patted Mark's back, using DevicePort, all your worries gone.

Customer Concerns ~
at System Failure, How to Quickly Repair and Recover Customer Services and Business?

Mark asked Bob one question: to save cost, some computer companies sell the system that has serial ports On Board (with LPC (Low Pin Count), and serial ports extended from LPC Bus), but the serial port LPC chip and Line Driver are attached to motherboard, and the entire computer needs to return to manufacturer for repair when serial ports fail (because LPC chip and Line Driver are attached to motherboard). The repair time is at least one or two months. During the repair time, the bank employees cannot work to provide customer services and run the business. This is a nightmare for the company owner! Would the owner really buy LPC serial port motherboard to save money? This would cause issues with repair later and troubles that company employees cannot do their job, customer services would be suspended and business would stop.

Some companies use interface card to expand serial ports. But when serial ports fail, they need to disassemble the case. This usually involves professional service and warranty, so bank MIS personnel will not do it. They will wait for the system company to come to repair it. It may take at least three, four days or as long as one or two weeks. This is the problem with using interface card to expand ports.

Bob patted Mark's back to reassure him. DevicePort has a powerful function that when failure occurs, another new DevicePort can do Hot Swap. It would work by moving Ethernet cable to the new DevicePort. Even non-MIS personnel can handle the replacement work by themselves.

DevicePort has another powerful function, called Fixed Com port number and automatic memory function, which is that at the replacement of a new four-port DevicePort if the old port number is Com 3/4/5/6, the new Port number will automatically be set as Com 3/4/5/6. Common serial port equipment such as USB, PCI/PCI-e, Device Server(Serial over IP), will lose the port number at replacement (Com 3/4/5/6 is already taken by previously installed driver, so the system will start from Com 7/8/9/10), and the bank software and peripherals will not be able to locate previous port number (Com 3/4/5/6), and as a result, all application software will fail to work. However, DevicePort has automatic recovery function for Port number to save troubles in resetting.

Bob told Mark that DevicePort has more benefits:

(1) DevicePort is easy to maintain. Its repair usually adopts large modulation for replacement to save time and improve efficiency. Because DevicePort separates I/O expansion from the system, its maintenance is easier and does not need to move out the entire computer. The maintenance cost is minimal. Since LPC onboard serial port is the solution of the minimum flexibility (also lowest cost), once there is a problem with it, the entire motherboard needs replacement. As present commercial applications emphasize TCO (Total cost of ownership), DevicePort is the best solution.

(2) From TCO maintenance cost point of view, DevicePort < USB < PCI/PCIE add-on Card < LPC on board.

(3) DevicePort has lower maintenance cost than PCI/PCIE because the replacement is easy and labor cost can be saved (not requiring professional technician, not interrupting machine operation), and maintenance cost is low, and DevicePort has lower cost than PC (direct replacement when it is broken.)

(4) DevicePort has lower TCO maintenance cost than USB because USB products do not aim at commercial applications. Once they are removed, it will need to reset (due to loss of Com port number) by technicians.

(5) As long as PCI/PCIE card is installed in the same slot, the port number setting will not be lost. This is the same for DevicePort. However, maintenance for PCI/PCIE will require disassembling the computer.

(6) Serial over IP product does not have the problem with loss of port number. Because port mapping is not redone, no Port is generated. It is the most troublesome to reset.

General manager Clark was surprised and a little suspected about improving the system and enormous benefit of DevicePort from manager Mark's briefing.

Customer Concerns ~
Repeated Investment in Equipment, Waste of Resources and Money

Mark was very satisfied with the Tiny All-in-one PC plus DevicePort (Dock Mode) introduced by Bob. He submitted the project proposal and budget to Clark, who is the bank general manager. After Clark reviewed the proposal and budget, he asked Mark some questions:

If we buy four-serial-port DevicePort now and will add two serial port devices for front desk in the future, like customer signature and touch screen, will the purchased DevicePort device become waste?

Mark gave thorough explanation for Clark's question: regarding the question by Clark that whether the present investment will become waste at future expansion? Mark explained that DevicePort uses Daisy-chain expansion mode without need of switches. The expansion is easy and simple and also saves cost on switches. The total cost for the system is lower than Serials over IP.

If future port expansion is needed, old DevicePort can remain function and users only need one two-serial-port DevicePort and use Daisy-chain for expansion connection. Two DevicePort devices can complete 4S+2S ports＝6S ports.

After Clark heard Mark's report, he was satisfied and signed off the purchase order.

Thin Client   DevicePort   DevicePort   Internet

〈Dock Mode〉4S   〈Dock Mode〉2S

── Ethernet

Daisy-chain of Thin Client and DevicePort

SUNIX self-developed
DevicePort IC and driver

Customer Concerns ~
Debug and Software Update

One year after the bank decided to invest new front desk system, Microsoft introduced Windows 9.0. So the bank decided to update operating system to Windows 9.0 as well as adding new serial peripherals. But the bank found the new serial peripherals have compatibility issues with DevicePort. Mark asked Bob to contact post-sales engineer Alex.

Alex immediately sent E-mail with updated DevicePort driver (for Windows 9.0) to Mark. Because SUNIX self-developed DevicePort IC and driver, and SUNIX had a team of experts to be responsible the Driver, API, Applications…as long as there was OS update, SUNIX team would immediately upgrade OS. They are one of the best expert team in serial port devices.

For debugging, SUNIX R&D used Log files to test simultaneously with customer having problems. Once they found any DevicePort problem, they could update firmware to renew DevicePort software, which is a very efficient customer service.

DevicePort® 〈Advanced Mode〉

Commercial Applications with Virtual Machine

Bob received inquiries from an interior and remodeling company. Celine was the MIS personnel for the company. She said their company had four employees and the old PC needed upgrade. The company had many construction drawings, renderings and remodel drawings… to review and output. The company office had the following output input devices to connect to each employee's computer:

Wide-format Printer
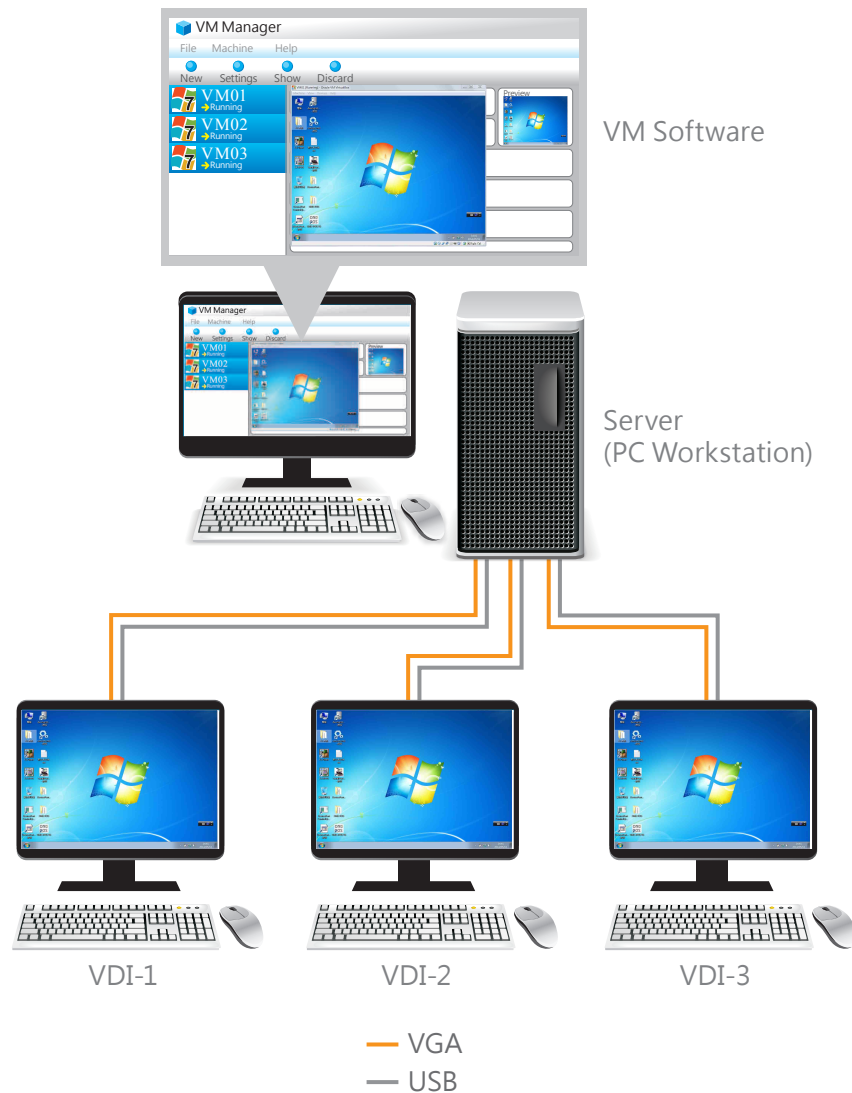– connecting to the parallel port of section leader's computer
Blueprint Machine
– connecting to serial port of assistant's computer
Pen Tablet
– connecting to serial port of engineer's computer

The owner hoped to improve work efficiency after upgrading computer, but without spending too much budget (the owner wanted new computer without spending much money, and improved work efficiency… this certainly made sense… the owner made a good point). This was how Celine described her system requirements to Bob.

Top: MIS department supervisor Celine was worried and talking to Bob on the phone
Bottom: Bob told Celine do not worry and he will solve her thorny problems

VM Software

Server
(PC Workstation)

VDI-1   VDI-2   VDI-3

— VGA
— USB

The structure of VM

Virtual Machine framework

After Bob heard the call, he immediately called Daniel and passed him the system framework and requirements by the customer. After Daniel heard it, he suggested VM (Virtual Machine) framework. Bob asked Daniel what was the Virtual Machine concept?

Daniel explained that he would describe the difference between two virtual environments before explaining virtual application.

 (1) Server-side application virtualization

Such virtualization framework is for virtualization software to self-manage Server/PC hardware resources. The representative software includes VM Ware vSphere ESX, Citrix Zen Server, Microsoft Hyper-V etc. and others like Linux virtualization technology. Such application is suitable for an environment more than five people, automation requirement and willing to invest in software and hardware. Because the number of users is high, it needs management software to deploy various virtual environments. This is like buying land and building residential apartment (virtual software), and then renting out rooms (virtual machine) with centralized management.

(2) Workstation virtualization applications

The prerequisite for such virtualization application is a workstation (PC or Server). Usually an operating system is installed first, as for common computer, and then virtualization software is added, such as Oracle VirtualBox, VMware Workstaion. It is installed on Windows platform. MAC OS X has two pieces of virtualization software, Parallel Desktop and VMware Fusion. Such application usually considers cost. Because the number of users is not high and there is no need of automated management mechanism, the software can be free or at charge. The installation is also easy, suitable for application environment for fewer than five people. This is like a small room (original OS) that is divided to smaller rooms (virtual machine) to rent out to others.

After Daniel explained VM framework, he explained VDI concept.

He said that Virtual Desktop Infra- structure (VDI) is a model for desktop service, allowing users to access to data center for OS image files. No matter the application mode is server or workstation, VDI environment can be built. For Clients or Users, they would not know how the remote network environment is established because all they see the same desktop as the original PC. The only thing that matters to users is whether the screen connection is smooth or not. Server virtualization is suitable for massive number of users because management software can complete many automated operations. But it has relatively high technology barrier. It requires special IT expertise. If workstation virtualization is used, it changes the concept of multiple computer installation to a single computer. Such application does not need management software, because it only builds virtual environment and then installs operating system and application software and does not need management.

Daniel suggested Bob that this Project could use one Intel Core i series processor as workstation for Virtual Machine and increased RAM to above 8G Byte (under VM framework, it is suggested each Client gets 2GB memory to assure smooth operation; thus, under VM framework, four users would need 8 GB RAM).

Daniel also explained to Bob about options for OS for VM Server as VM Ware or Citrix …products. As long as each terminal had the software to connect to remote desktop, it would get the same work environment as the original. VDI (Virtual Desktop Infrastructure) used "centralized computing, distributed display" principle and through virtualization technology integrated all user-end computing for centralized processing in enterprise data center. The desktop user only uses simple terminal or specialized small terminal to operate input/output on display without any being involved in any computing and applications.

Regarding which virtual environment and application was to select, Daniel suggested that it depended on customer need and number of online users. He analyzed the difference between server end and workstation virtualization and let customer decide which framework to select. He let the customer know the presently available server end virtualization including VMWare vSphere ESX, Citrix Zen Server, Microsoft Hyper-V etc. They were charged by the number of online users. Management software would be charged. If workstation virtualization was selected, free virtualization software was available.

VMware + Server

Switch

VM1+Thin Client   VM2+Thin Client   VM3+Thin Client

— Ethernet
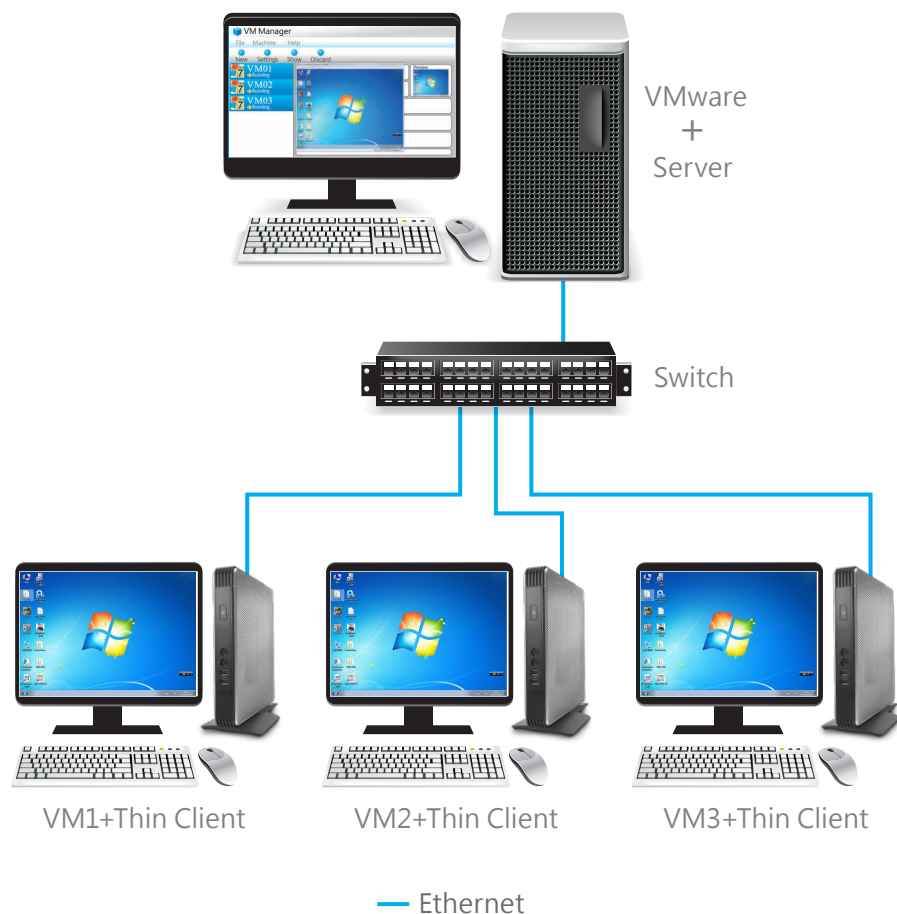
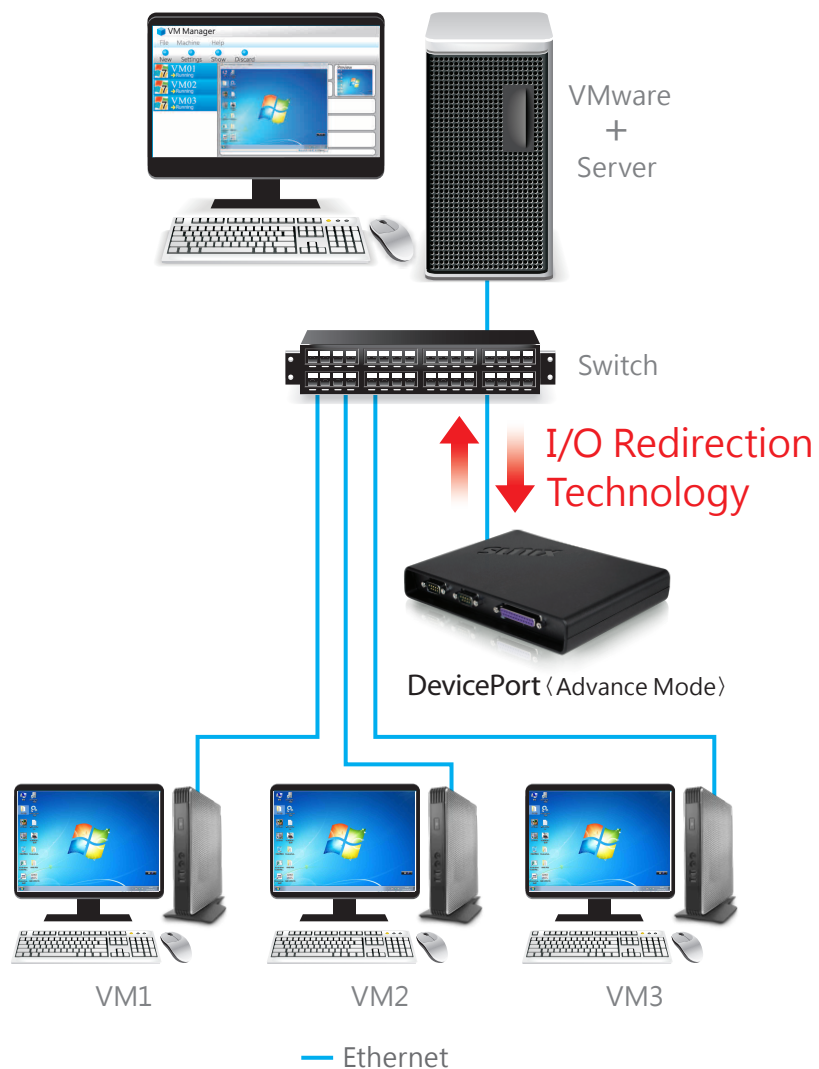The structure between VM and Thin Client

Customer-end Virtual Terminal

After Bob assessed virtual machine and VM operating system, he needed to assess four terminal devices. There were the following options for customer-end terminals:

(1) Fat Client, usually PC Base as Fat Client, i.e. taking Intel CPU as PC. Fat Client refers to all applications are installed on customer's machine. Server only transmits out original data. Everything is completed by customer's application software, such as Chrome, Firefox, IE etc. Most information and data processing is operated on customer's computer.

(2) Thin Client, also called simplified customer-end terminal, usually it does not use Intel CPU, but instead, it is ARM base as CPU. Thin Client refers to a computer terminal at customer end – server network system without need of application program. Through protocols it communicated with server and connected to local area network. It simplified customer end operation by moving mouse and keyboard input to server for processing. Thin Client end transmitted mouse, keyboard input to server for processing. The server transmitted back the processing result to Thin Client display. Different Thin Clients could log in server and simulated an interdependent working environment in

server; opposite to this, general client end would have local data processing as much as possible and only transmitted necessary communication data to server (or other client end).

(3) Zero Client was also called Ultra-thin Client, or called Zero by some people because it basically did not have CPU, but used pure hardware circuits to make up keyboard port, mouse port, monitor port and used Ethernet for Server connection. It was a computing mode based on server. In it, the terminal user did not have local software, and there was little hardware. Zero Client was often used in virtual desktop framework.

Bob provided the comparison for product selection and function to Celine. For price, Fat Client, Thin Client and PC were similar. It could be more expensive than PC due to brand factor. But Zero Client was relatively cheaper. If PC was the benchmark, the comparison for the three terminals, it was certainly PC > Fat Client > Thin Client > Zero Client. But it was not used as PC. So which one was better? It depended on the terminal equipment function and application by customer. It was not good or bad, but only performance price ratio and application suitability.

VMware
+
Server

Switch

I/O Redirection
Technology

DevicePort〈Advance Mode〉

VM1   VM2   VM3

— Ethernet

Structure of VM and I/O Redirection Technology

World First I/O Redirection Technology

Bob and Celine took the cheapest Zero Client for test and found it did not work under VM Ware or Oracle VM VirtualBox. Zero Client could only work under Microsoft Multi-point. But no one was using Multi-Point, so Zero Client was not selected.

Bob hoped Celine to test and compare Fat Client and Thin Client. But Celine complained the two devices were as expensive as PC. Where was the value? Was this the same as each individual buying a PC as Client?

However, Celine found that under VM no matter which one was terminal there was more serious problem than price. It was: if VM system was used, no matter it was PC, Thin Client or Fat Client as terminal, all serial and parallel peripherals (wide-format printer connected to section chief's computer, blueprint machine connected to assistant's computer serial port and pen tablet connected to engineer's computer serial port) for I/O ports connected to the terminal (for example: serial port, parallel port…) did not work at all. This worried Bob and Celine very much.

Bob soon called Alex and hoped he helped with solutions. Alex told Bob that it did not work because VM virtual machine was not able to map devices on terminal I/O ports through VDI environment. Because the client's application program run on VM and could not locate peripherals connected to terminal I/O ports (for example: serial port, parallel port…).

Alex said that if you wanted VM server through VDI environment to map all serial and parallel devices connected to terminal I/O ports. He suggested SUNIX DevicePort (Advanced Mode), which was the world only I/O Redirection technology, enabling VM server to catch all peripherals connected to different expansion I/O interfaces and ports (such as serial ports, parallel ports, digital signal terminal port DIO, linear signal control port AIO, PS2 signal port, cashier drawer control port…) on the terminal DevicePort (Advanced Mode). This was the world only product supporting I/O redirection technology.

DevicePort,
solve all my problems!

Resource Sharing

Celine successfully introduced the VM system framework for Design Department into VDI environment and Thin Client terminal and greatly improved work efficiency and value for the remodel company as follows:
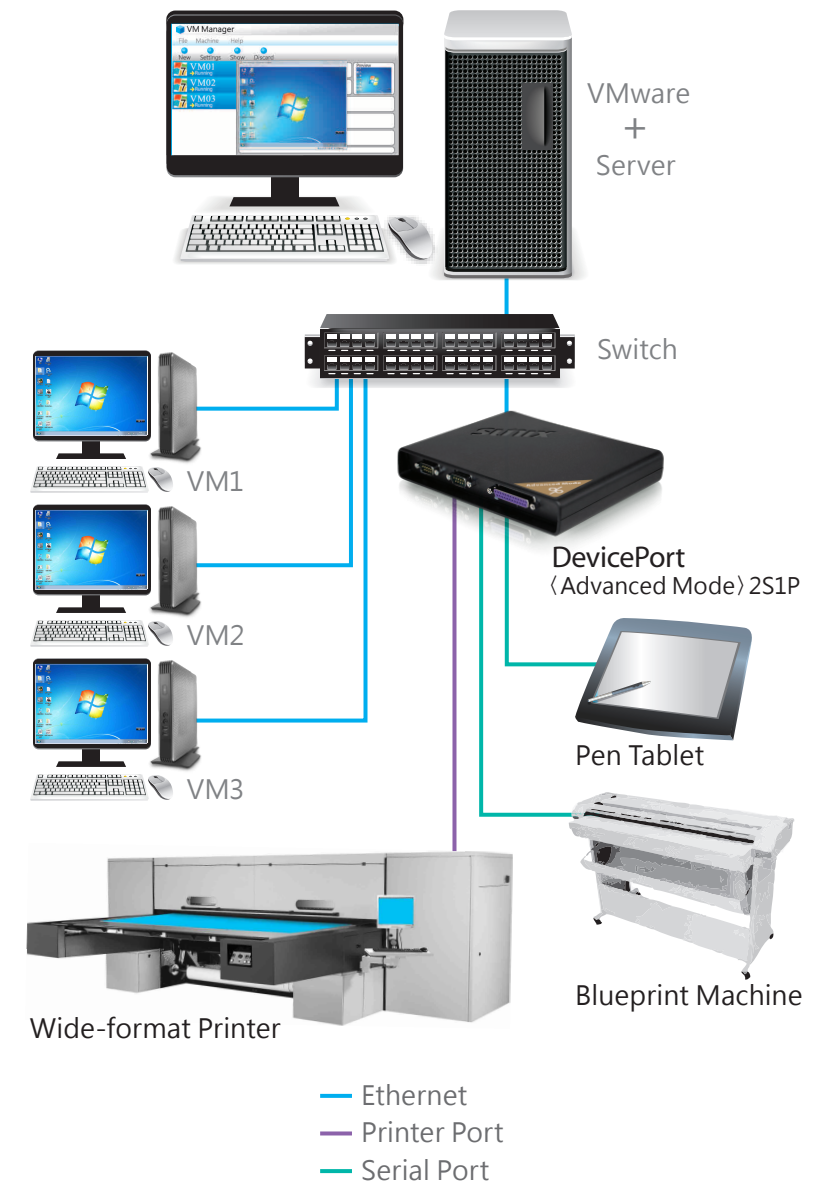
◆ Power consumption was only 1/50 of PC.
◆ Equipment was much cheaper than PC.
◆ Assignment of work environment to terminal users was efficient and safe.
◆ Client end software was simplified to reduce risk of malware attack.
◆ MIS could easily manage each account.
◆ Under VDI environment, the administrator could reduce the number of PC and implement multiple virtual PC on server hardware.

Therefore, the company business grew rapidly. After half a year, the owner wanted to expand the Design Department from four people to seven people. But the owner asked Celine to make the expensive serial and parallel single-person devices (wide-format printer, serial blueprint machine, and serial pen tablet) available

for the entire Design Department. Employees also hoped that everyone could share the serial and parallel expensive input/output devices to improve work efficiency, i.e. Resource sharing.
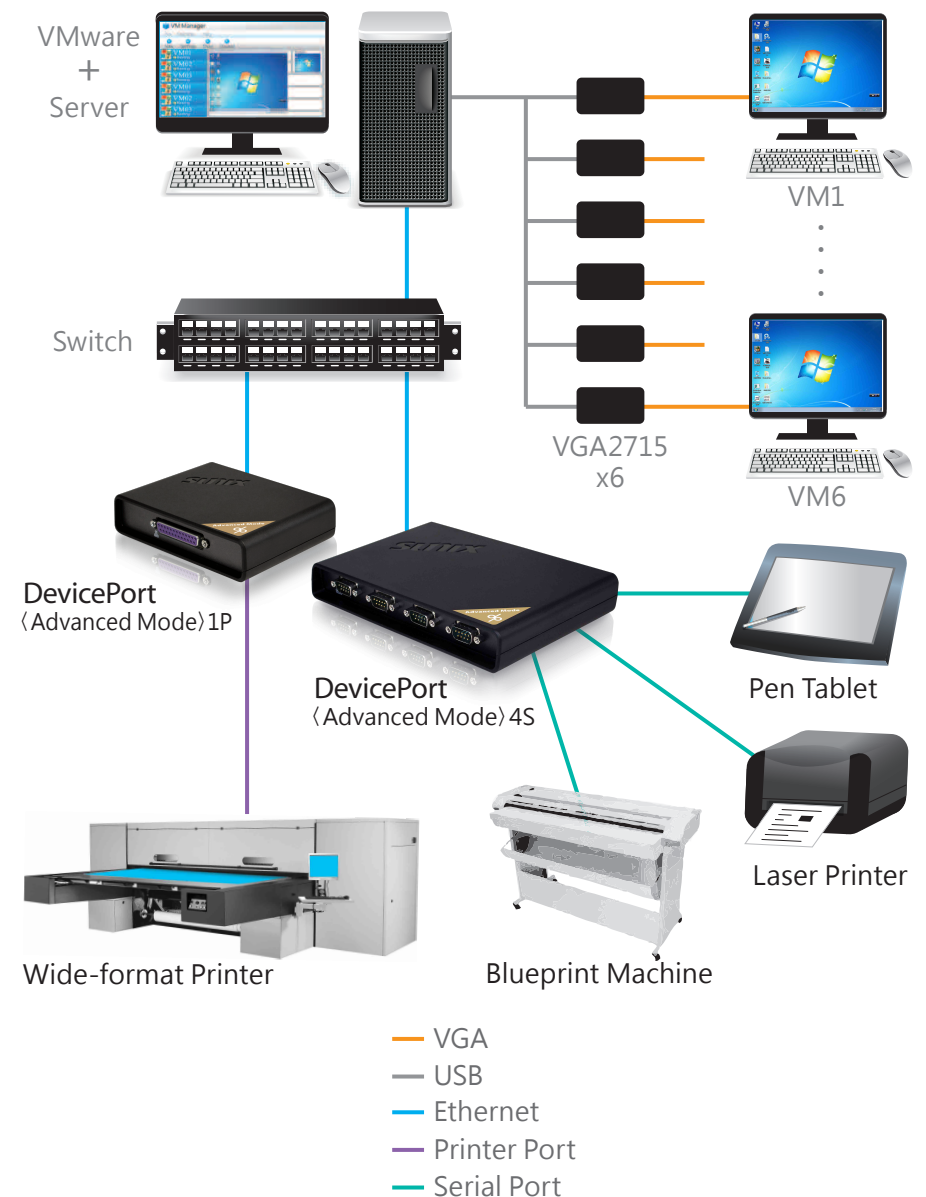
Celine was very surprised after hearing what the owner asked for. How could this happen? Such expensive serial and parallel devices (parallel wide-format printer, serial blueprint machine, and serial pen tablet) were not network server. How could they be shared by the entire department? This inquiry just did not make sense. It was impossible to make it! Celine said: "if she could have done it, she would not need to work at this company and could just go to sell this solution."

Celine told Bob madly about the owner's inquiry. After Bob heard it, he laughed and said "if there were such a Solution, he would not need to do system integrator and would make lots of money being sales agent for such product". Then he told this to Daniel.

VMware
+
Server

Switch

VM1

VM2

VM3

DevicePort
〈Advanced Mode〉2S1P

Pen Tablet

Blueprint Machine

Wide-format Printer

— Ethernet
— Printer Port
— Serial Port

Daniel told Bob and Celine that there was not a problem. It would only need a SUNIX two-serial and one-parallel (2S/1P) DevicePort (Advanced Mode), plus one cheap Switch to share the serial blueprint machine, serial pen tablet and parallel wide-format printer (= 2S/1P) in the entire department. The framework is as right page:

This was absolutely an unprecedented application and breakthrough. But Daniel said that besides SUNIX DevicePort (Advanced Mode) in the VM system was able to allow sharing of the million-dollar serial/ parallel equipment, it only took six VGA2715 (USB3.0 to VGA) to make the purchase of Think Client or PC unnecessary for the Design Department of seven people, which saved for the owner even more…

VMware
+
Server

VM1

VM6

Switch

VGA2715
x6

DevicePort
〈Advanced Mode〉1P

DevicePort
〈Advanced Mode〉4S

Pen Tablet

Laser Printer

Wide-format Printer

Blueprint Machine

— VGA
— USB
— Ethernet
— Printer Port
— Serial Port

sunix

Recommended SUNIX
products, I am confident!

Support Remote Control Mode

Bob got more and more confidence for SUNIX series products to fit future PC Cloud market needs. But because more than half of the business in consumer or commercial market would involve smartphones and tablet PC to replace PC to facilitate communication with customers, if Bob's company could not keep up with the market trend, his SI company would be in jeopardy. In the era of mobile, Cloud, handheld and Wifi, how would Bob's SI company cope with changing market needs and evolution?

One day when Daniel and Bob talked about smartphones and tablet PC market application status, Bob asked Daniel how smartphones and tablet PC could use DevicePort (Advanced Mode) to connect the peripherals. Daniel told Bob that DevicePort (Advanced Mode) would support remote control to provide more flexibility in the expansion device for mobile device (smartphones and tablets).

Daniel used a simple example based on a company he ever contacted. There was an individual who open a clothing store. He wanted to use a Smartphone for simple "delivery, shipping and inventory management application system", so he could use Smartphone any time to check inventory, monitor inventory and delivery … etc.

SUNIX

Customer Requirements:
 (1) Use a Smartphone (no additional purchase) that is already used
 (2) Use Bar Code Scanner and numerical keyboard to process delivery, shipping and inventory
 (3) Use a printer to print inventory report, sales analysis…

Daniel told Bob that he could use a wireless router to connect Smartphone and 2S/1P DevicePort (Advanced Mode). 2S/1P DevicePort was connected to a serial bar code scanner (to check inventory), a serial numerical keyboard (to enter inventory quantity), and a parallel printer (to print inventory report). Such a simple framework and application could allow individual business owner to apply mobile device (Smartphone and tablet) to personal business system.
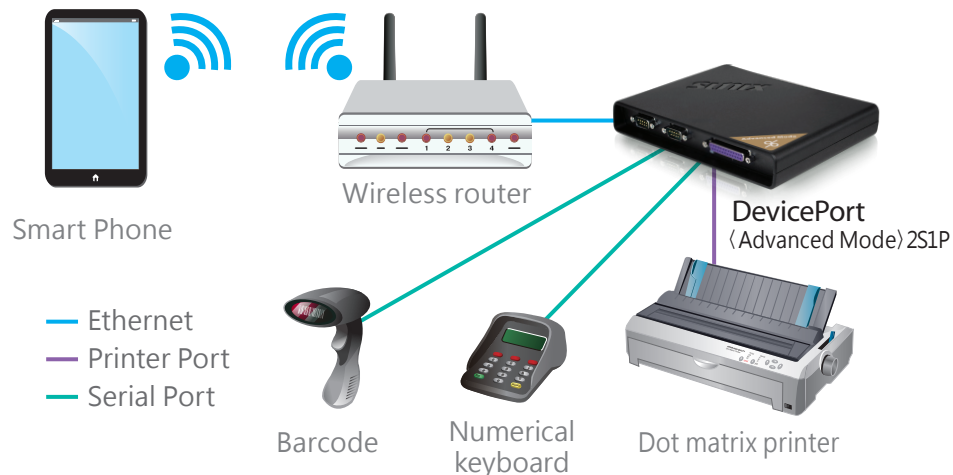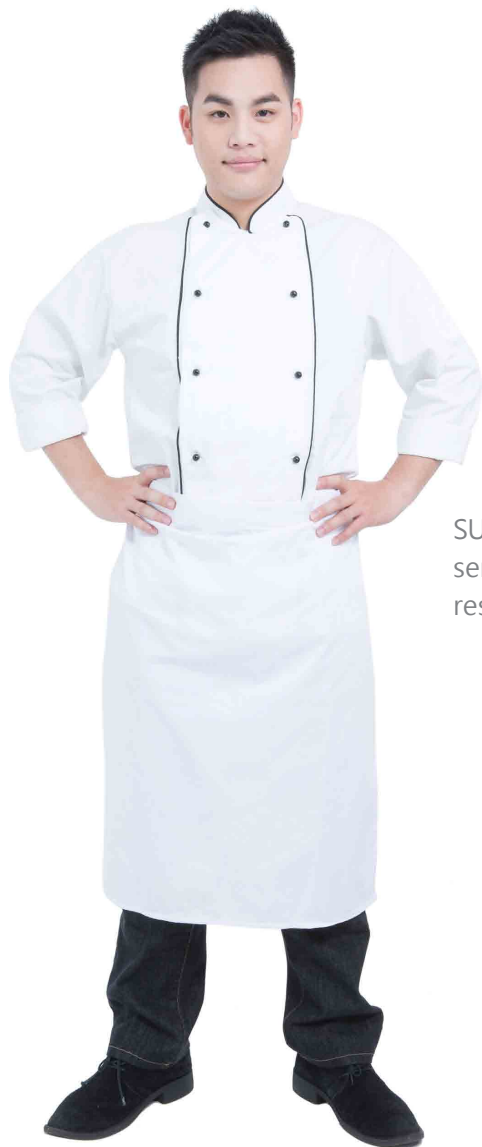
Equipment investment requirements:
 (1) A wireless router
 (2) A Smartphone (original Smartphone, no additional purchase needed)
 (3) A serial bar code scanner, a serial numerical keyboard, a parallel printer
 (4) A 2S/1P DevicePort (Advanced Mode)

With such a framework, what benefits would DevicePort bring about?
 (1) Save one PC
 (2) Change from immobile work mode to wireless mobile work mode (cellphone Wifi)
 (3) Equipment can work with cellphone by remote control to increase work efficiency and special convenience.

Smart Phone

Wireless router

DevicePort
〈Advanced Mode〉2S1P

— Ethernet
— Printer Port
— Serial Port

Barcode   Numerical keyboard   Dot matrix printer

SUNIX DevicePort improves service and managemen of my restaurant

TDMA (Time Division Multiple Access) Resource Sharing

Eric was an owner of a small restaurant (2~5 employees). He became aware of the system integration expert Bob. He called Bob and hoped to use the minimal hardware investment to implement restaurant management system, as follows.

Eric requirements:
(1) Three PAD for waiter/ waitress, hardware system that could take orders simultaneously from 2~3 tables
(2) Eric did not want to spend big money on VM server.
(3) Eric only hoped to invest in a checkout hardware peripheral (cashier drawer, credit card machine, and password keyboard) to be used among three waiter/waitress.
(4) Because the kitchen was smoky and oily, he did not want a computer there, but also hoped the order taken by waiter/waitress could be directly printed in kitchen with table number, orders, quantity, notes to improve the efficiency.
(5) Eric hoped the tablet of every waiter/waitress works not only for ordering but also connects to checkout system hardware peripherals (cashier drawer, credit card machine and password keyboard).

After Bob understood Eric's needs, he was clear that Eric was a typical small business owner and only wanted to invest three PAD and one checkout system hardware peripherals (cashier drawer, credit card machine and password keyboard) to start his business. Bob called Daniel and found he did not even want to invest a VM Server, not even a PC? How could this system exist? It was ridiculous. Was he dreaming?

Daniel told Bob that it was possible, not a dream and there was nothing wrong with that, and it would only need SUNIX DevicePort (Advanced Mode) to make it happen. The system framework was to use one wireless router, one 4S DevicePort (Advanced Mode) and one 1P DevicePort (Advanced Mode) to connect one set of POS peripherals (cashier drawer, credit card and password keyboard) to one 4S DevicePort, and one printer to one 1P DevicePort (Advanced Mode). Such equipment investment would be sufficient.

Equipment Investment List:
 (a) One wireless router
 (b) Three tablets
 (c) One 4S DevicePort (Advanced Mode)
 (d) One 1P DevicePort (Advanced Mode)
 (e) One set of POS peripherals (cashier drawer, credit card machine and password keyboard)
 (f) One printer

Daniel explained that SUNIX DevicePort (Advanced Mode) had flexible port mapping to support off-line mode, so when smartphone and tablet were off-line, APP was not affected. When DevicePort was used, it could be used for one Host (like Smartphone or tablet) at a time. But when it worked with Advance-mode off-line/Static Port mapping function, it would cut off the line as it was not used to allow other hosts (such as smartphones or tablets) to share the resources. Through extra resource control mechanism, it was possible to achieve effective use for many-to-one or many-to-many.

SUNIX

Tablet x3

Wireless router

DevicePort
〈Advanced Mode〉4S

DevicePort
〈Advanced Mode〉1P

Credit Card machine

Touch Panel + Cash Drawer

Password keyboard

Dot matrix printer

— Ethernet
— Printer Port
— Serial Port

Benefits of SUNIX DevicePort to restaurant:
 (1) Save one VM server
 (2) Save four Clients (three for waiter/waitress, one for kitchen)
 (3) Save two sets of POS peripherals (cashier drawer, credit card and
       password keyboard), because three people could share one
 (4) waiter/waitress use PAD to take order, checkout…
 (5) Printer can be set in kitchen, does not have to be by PC

DevicePort for large chain stores can reduce the cost of information systems, and also can improve service and management efficiency.

Provide Value of Cloud System for Commercial Applications

After one year of efforts, Eric's restaurant starting from a small restaurant had become a fast food restaurant chain of eighty or so restaurants. He went to see Bob and asked that as his headquarter was in Taipei, as well as central kitchen, he hoped to be able to record and analyze the customer orders from all eighty or so restaurants every day, sales at each location every day, inventory, delivery and shipping analysis… and every restaurant on average had five ordering windows (four hundreds ordering and checkout windows in total), every POS machine connecting to serial Bar Code Scanner and password keyboard, cashier drawer, credit card machine, thermal printer…etc, and after checkout the data immediately go to headquarter computer for consumer behavior analysis, preference analysis, dollar amount of consumption analysis…

Eric asked for the following:
 (1) Four hundreds of checkout systems for eighty or so restaurants should be implemented in three days because it is a huge loss even if the business stops for one day.
 (2) Within the four hundreds of checkout systems for eighty or so restaurants, if one system fails, it should only need one

service person to repair it within ten minutes, but not professional MIS Department or the vendor to repair it next day, or send the entire system to manufacturer because that would cause a huge loss of one week business.

(3) The invested equipment should not be obsolete and replaced as checkout counter is expanded in the future (such as adding a new serial port digital signature device).

After analysis of the above needs, Bob and Daniel suggested Cloud server be used for headquarter for consumer behavior collection and data analysis, i.e. Big Data analysis and application, which sends the orders every day, business data…from the serial bar code scanners of POS machines and password keyboards from four hundreds checkout systems of eighty or so restaurant locations to the headquarter Cloud server and disk drive arrays for analysis and processing.

But Cloud system used VDI as management software for every ordering window POS machine (Client), so there was a serious problem, i.e. the server could not retrieve the data from the serial Barcode Scanner and password keyboard, cashier drawer, credit card machine, thermal printer…etc. that connected to Client end. The concept was that Cloud Server could not map the data from the local device (Client connected serial device). Only if all four hundreds of Clients (ordering Windows POS machine) connect to one SUNIX DevicePort (Advanced Mode) and use

world only SUNIX I/O Re-direction, it is possible to transmit the order data from each customer, quantity, payment… from four hundreds of Clients (ordering Windows POS machine)… to Cloud server for analysis and statistical work (Big Data application). As for three additional requirements by Eric, Daniel replied Bob in the following:

(1) Massive Deployment Capability— use one CISCO VPN router on system framework, add DevicePort (Advanced Mode) to provide management and massive deployment capability, installation is simpler and easier, so the efficiency is higher when massive installation is needed. It also has less complicated setup, which also means fewer errors at installation. Thus, it is possible to complete within three days.

(2) Fault Hot Swap Update—DevicePort adopts "Plug and Play" and "Hot Swap" design, which has automatic detection and mapping. It does not need any initial setup. Its use is simple. General users can expand/ use it by themselves. Operation interface and OS are compatible without need of extra learning. Operation interface for DevicePort Control Center is the same as the internal control for Windows Device Manager as well as message display. For users who are already familiar with Windows, they do not need to learn extra things to understand this product.

Therefore, when the DevicePort for a checkout system faults, it does not need a computer specialist, but only the

front desk service personnel to immediately hot swap the DevicePort without power off and does not need any initial setup to restore the system.

(3) Investment is not Wasted at Equipment Update－DevicePort adopts Daisy Chain Topology. If your original 4S DevicePort is not enough, you can buy one 2S DevicePort, so all DevicePort can be connected and you do not need to update all old DevicePort devices. Such method is called Daisy Chain, which does not waste previous investment at equipment update.

Thus, SUNIX DevicePort (Advanced Mode) provides the following commercial values for Cloud System:

(1) I/O Re-direction－ allows Cloud System not only work on pure data compilation in Call Center, but also let Cloud System enter global commercial system.

(2) "Hot Swap" design allows rapid system recovery.

(3) Daisy Chain port expansion mode.

Real-time Packet Design Protocol

Jason worked at a cellphone power supply manufacturer, an OEM Power Adapter manufacturer for brand name cellphones. His company hoped to use RS-232 load generator to automatically test voltage (CV), rated current (CC), rated resistance (CR), dynamic load (DCC) mode and short circuit output simulation…, and then used computer to collect such test data to determine quality. Since the demand from smartphones and tablet PC was huge, the traditional method to simultaneously test four power adaptors was not fast enough to meet the delivery time. Therefore, Jason asked Bob for the following:

Jason's needs:
 (1) Serial (RS-232) adaptor box to support high port number—at least 32 ports, no limit on connections, maximum expansion to 255 ports.
 (2) High efficiency transmission and response speed— the system receives 32 to 255 load generators to automatically test rated voltage (CV), rated current (CC), rated resistance (CR), dynamic load (DCC) mode and short circuit output, so it needs high transmission efficiency and high response speed.

Using SUNIX DevicePort to create a modern efficient plant.

After Bob received Jason's inquiry, he asked help from Daniel, who offered SUNIX 32 serial port DevicePort (Advanced Mode).

Why to use SUNIX DevicePort:
(1) High port number, one can achieve 16, 32, 64 serial ports, or up to 255 ports with Daisy Chain method, flexibility in expansion, easy to repair (Hot Swap replacement).
(2) DevicePort adopts Real-time packet design protocol, which compared to common TCP/IP protocol improves significantly transmission efficiency and response speed.
(3) Use minimal CPU resources.

The largest feature was that all SUNIX DevicePort packet design does not adopt TCP/IP design protocol, but proprietary Real-time packet design protocol. The biggest difference between the two was transmission efficiency and response speed. Since it did not have the overhead for conversion, data processing was timely.
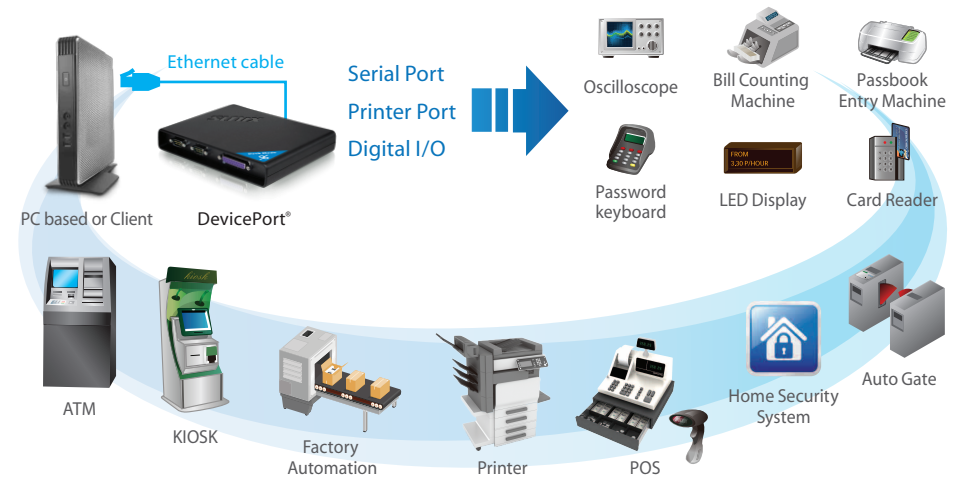
DevicePort® Solutions Product Family

INDEX

DevicePort® Solutions
Product Family

Introduction

SUNIX DevicePort® is the ideal choice to enable your current serial or printer devices networking, such as RS-232/422/485 devices, digital I/O sensors, or printers. DevicePort® works as a PCIe add-on card operation without complex software configuration and it supports any windows based tiny PC and AIO system over Ethernet connectivity.

Ethernet cable

Serial Port
Printer Port
Digital I/O

PC based or Client   DevicePort®

Oscilloscope   Bill Counting Machine   Passbook Entry Machine

Password keyboard   LED Display   Card Reader

ATM   KIOSK   Factory Automation   Printer   POS   Home Security System   Auto Gate

DevicePort®
Ethernet Enabled Port Replicator

RS-232, RS-422, RS-485, Printer, DIO, Cash Drawer

• SUNIX SoC Design

Built-in SUNIX DPL2000Q high-Performance Ethernet-UART/Printer controller and exclusive I/O redirection technology.
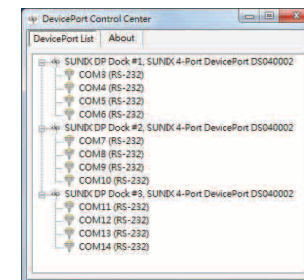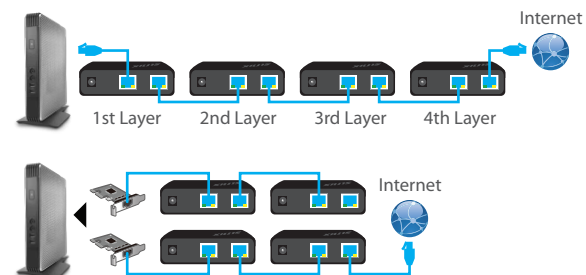
• Easy Installation

Easy connection between PC and DevicePort® by Ethernet networking.
- Compatible existing software.
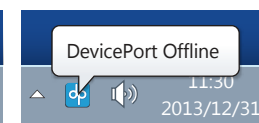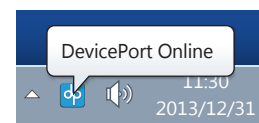- Support Plug-n-Play & Hot plug.

Ethernet

• Powered COM Feature

Hot-Swapping without PC power-off.
- Optional power output over software utility.
- Support +5VDC output.
- Power Cable to USB port.

Barcode

5V

- U.S. Pat. No. 8,245,058
- China Invention Pat. No.CN101958495A
- Taiwan Invention Pat. No. I405083

Internet

1st Layer   2nd Layer   3rd Layer   4th Layer

Internet

• Daisy Chain Topology

SUNIX DevicePort® product built-in dual 10/100 Ethernet channels, one for data downstream to PC host and the other upstream port for Ethernet switch connecting. With dual Ethernet channels feature, DevicePort® supports daisy chain network topology for multiple boxes connection. (Maximum 4 boxes or 12 COM / 3 Printer ports expansion).
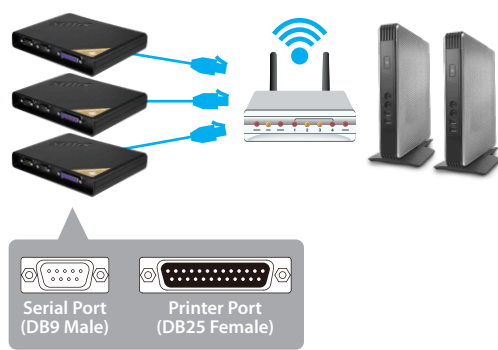
DevicePort Online   DevicePort Offline
11:30   11:30
2013/12/31   2013/12/31

Ports (COM & LPT)
SUNIX COM Port (COM3)
SUNIX COM Port (COM4)
SUNIX COM Port (COM5)
SUNIX COM Port (COM6)

• Auto-Detect & Port-Mapping

With Ethernet hot-plug and system auto-detect capability, just plug RJ45 Ethernet cable between DevicePort® and PC host side, system will create physical COM/Printer ports automatically with real time data transmit and receive communication.
- Real Time data transmit and receive.
- Physical COM port accessed via device manager.
- Up to 255 COM ports working simultaneously.
- Fixed COM port numbers.

DevicePort® Dock Mode Auto-Configuration

Ethernet cable

5V from USB Port

| Serial Port (DB9 Male) | Printer Port (DB25 Female) |
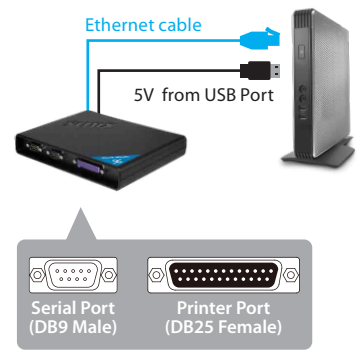
DevicePort® Advanced Mode Power-Management

| Serial Port (DB9 Male) | Printer Port (DB25 Female) |

DevicePort® Dock and Advanced Mode Compare Table

Product	Dock Mode	Advanced Mode
Market	PC Add-on Card Placement Solution	Automation & Control
Design	SUNIX SoC	SUNIX SoC
Response	Real Time	Real Time
Protocol	Ethernet I/O Redirection*	Ethernet I/O Redirection*
Identify	MAC Address	MAC Address
Deployment	Single PC	Single PC
	Local	Local / Remote
Operation Mode	Real COM (Real I/O interface)	Real COM (Real I/O interface)
Management Utility	SUNIX DevicePort Control Center	SUNIX DevicePort Manager
Security	Smart Dock Protection*	Data Encryption
User Experience / Feature	Ethernet Hot-Swapping	DevicePort Authority Management
	Plug-n-play Auto-Detect	Plug-n-play Auto-Detect/Mapping with MAC address bound
	Plug-n-play Auto-Mapping	Smart-COM Deployment Off-Line Mapping
	Daisy Chain	Multiple Access

* Ethernet I/O Redirection technology is SUNIX proprietary protocol for COM & LPT expansion over cat6/5.
* Smart Dock protection feature prevent record working from spy recording device

DevicePort® 〈Dock Mode〉

◆ RS-232/422/485

◆ RS-232

◆ RS-422/485

◆ MultiIO

DevicePort® Dock Mode Ethernet enabled RS-232/422/485 Port Replicator

Model		DPK302H00	DPK304H00	DPK308H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	2-Port	4-Port	8-Port
	Board Connector	DB9 Male		
	Interface	RS-232, RS-422, RS-485		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	RS-232: TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND		
	Baud rate	50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
Ethernet Communication	Number of Ports	2-port, Upstream to Ethernet Switch, Downstream to PC Host		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	5 to 12VDC		
	Power Consumption	2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	Microsoft Windows	DevicePort Control Center: Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

DevicePort® Dock Mode Ethernet enabled RS-232 Port Replicator

Model		DPKS02H00 DPKX02H00	DPKS04H00 DPKX04H00	DPKS08H00 DPKX08H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	2-Port	4-Port	8-Port
	Board Connector	DB9 Male		
	Interface	RS-232		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI		
	Baud rate	DPKS Series: 50bps ~ 115.2Kbps DPKX Series: 50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
Ethernet Communication	Number of Ports	2-port Upstream to Ethernet Switch, Downstream to PC Host		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	5 to 12VDC		
	Power Consumption	2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	Microsoft Windows	DevicePort Control Center: Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

DevicePort® Dock Mode Ethernet enabled RS-422/485 Port Replicator with Surge and Isolation Protect

Model		DPKD02HSI	DPKD04HSI	DPKD08HSI
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	2-Port	4-Port	8-Port
	Board Connector	DB9 Male	DB9 Male	RJ45
	Interface	RS-422, RS-485		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND		
	Baud rate	50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
	Surge Protection	2KV Surge IEC61000-4-5 Level 3 Surge Immunity Test		
	Isolation Protection	1.5 KV Isolation IEC60747-5-5 Hi-Pot		
Ethernet Communication	Number of Ports	2-port, Upstream to Ethernet Switch, Downstream to PC Host		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	12 to 48VDC		
	Power Consumption	3.5W @ 12VDC		
	Connector	Terminal Block & DC Jack type		
	Protection	• Redundant Power Input • Protects against V+ & V- reverse		
Software Support	Microsoft Windows	DevicePort Control Center: Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	-10 to 60°C (14 to 140°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	120x90x24(mm), 350g	165x106x32(mm), 780g	165x106x32(mm), 850g

DevicePort® Dock Mode Ethernet enabled RS-232/Printer Port Replicator

Model		DPKM11H00	DPKM21H00	DPKP01H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	1-Port	2-Port	—
	Board Connector	DB9 Male		—
	Interface	IEEE1284 RS-232		—
	FIFO	1Kbyte Hardware / per port (Hardware)		—
	Signal	TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI		—
	Baud rate	DPKS Series: 50bps ~ 115.2Kbps DPKX Series: 50bps ~ 921.6Kbps		—
	Data bit	5,6,7,8		—
	Stop bit	1,1.5,2		—
	Parity	None, Even,Odd, Space,Mark		—
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		—
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		—
Parallel Communication	No. of Port	1-port		
	Board Connector	DB25 Female		
	Interface	IEEE1284 Printer Support		
	FIFO	1Kbyte Hardware / per port		
	Speed	Maximum 2.7MBps		
Ethernet Communication	Number of Ports	2-port, Upstream to Ethernet Switch, Downstream to PC Host		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	5 to 12VDC		
	Power Consumption	2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	Microsoft Windows	DevicePort Control Center: Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

SUNIX

DevicePort® 〈Advanced Mode〉

◆ RS-232/422/485

◆ RS-232

◆ RS-422/485

◆ MultiIO

DevicePort® Advanced Mode Ethernet enabled RS-232/422/485 Port Replicator

Model		DPA302H00	DPA304H00	DPA308H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	*No. of Port*	2-Port	4-Port	8-Port
	Board Connector	DB9 Male		
	Interface	RS-232, RS-422, RS-485		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	RS-232: TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND		
	Baud rate	50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
Ethernet Communication	*Number of Ports*	2-port		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	*Input Voltage*	5 to 12VDC		
	Power Consumption	2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	*Microsoft Windows*	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	*Hardware*	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	*Operating Temperature*	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

DevicePort® Advanced Mode Rackmount Ethernet enabled RS-232/422/485 Port Replicator

Model		DPA316H00	DPA332H00
Product			
Controller		SUNIX DPS4120BL	
Serial Communication	*No. of Port*	16-Port	32-Port
	Board Connector	RJ45 Female	
	Interface	RS-232, RS-422, RS-485	
	FIFO	1Kbyte Hardware / per port (Hardware)	
	Signal	RS-232: TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND	
	Baud rate	50bps ~ 921.6Kbps	
	Data bit	5,6,7,8	
	Stop bit	1,1.5,2	
	Parity	None, Even,Odd, Space,Mark	
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)	
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line	
Ethernet Communication	*Number of Ports*	2-port	
	Speed	10/100 Mbps, auto MDI/MDIX	
	Connector	RJ45	
	Magnetic Isolation Protection	1.0K Built-in	
Power Requirements	*Input Voltage*	AC Models: 100 to 240 VAC	
	Power Consumption	AC Models: 100mA @ 110 VAC	
	Connector	AC-Plug	
Software Support	*Microsoft Windows*	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)	
Regulatory Approvals	*Hardware*	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438	
	Software	Microsoft WHQL Certification	
Regulatory Approvals	*Operating Temperature*	0 to 45°C (32 to 113°F)	
	Operating Humidity	5 to 95% RH (non-condensing)	
	Storage Temperature	-20 to 85°C (-4 to 185°F)	
	Housing	Metal	
	Dimensions	440x210x45(mm), 3150g	440x210x45(mm), 3350g

DevicePort® Advanced Mode Ethernet enabled RS-232 Port Replicator

Model		DPAS02H00 DPAX02H00	DPAS04H00 DPAX04H00	DPAS08H00 DPAX08H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	2-Port	4-Port	8-Port
	Board Connector	DB9 Male		
	Interface	RS-232		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI		
	Baud rate	DPAS Series: 50bps ~ 115.2Kbps DPAX Series: 50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
Ethernet Communication	Number of Ports	2-port		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	DC Models: 5 to 12VDC		
	Power Consumption	DC Models: 2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	Microsoft Windows	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

DevicePort® Advanced Mode Rackmount Ethernet enabled RS-232 Port Replicator

Model		DPAX16H00	DPAX32H00
Product			
Controller		SUNIX DPS4120BL	
Serial Communication	No. of Port	16-Port	32-Port
	Board Connector	RJ45 Female	
	Interface	RS-232	
	FIFO	1Kbyte Hardware / per port (Hardware)	
	Signal	TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND	
	Baud rate	50bps ~ 921.6Kbps	
	Data bit	5,6,7,8	
	Stop bit	1,1.5,2	
	Parity	None, Even,Odd, Space,Mark	
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)	
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line	
Ethernet Communication	Number of Ports	2-port	
	Speed	10/100 Mbps, auto MDI/MDIX	
	Connector	RJ45	
	Magnetic Isolation Protection	1.0K Built-in	
Power Requirements	Input Voltage	AC Models: 100 to 240 VAC	
	Power Consumption	AC Models: 100mA @ 110 VAC	
	Connector	AC-Plug	
Software Support	Microsoft Windows	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)	
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438	
	Software	Microsoft WHQL Certification	
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)	
	Operating Humidity	5 to 95% RH (non-condensing)	
	Storage Temperature	-20 to 85°C (-4 to 185°F)	
	Housing	Metal	
	Dimensions	440x210x45(mm), 3150g	440x210x45(mm), 3350g

DevicePort® Advanced Mode Ethernet enabled RS-422/485 Port Replicator with Surge and Isolation Protect

Model		DPAD02HSI	DPAD04HSI	DPAD08HSI
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	2-Port	4-Port	8-Port
	Board Connector	DB9 Male	DB9 Male	RJ45
	Interface	RS-422, RS-485		
	FIFO	1Kbyte Hardware / per port (Hardware)		
	Signal	RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND		
	Baud rate	50bps ~ 921.6Kbps		
	Data bit	5,6,7,8		
	Stop bit	1,1.5,2		
	Parity	None, Even,Odd, Space,Mark		
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		
	Surge Protection	2KV Surge IEC61000-4-5 Level 3 Surge Immunity Test		
	Isolation Protection	1.5 KV Isolation IEC60747-5-5 Hi-Pot		
Ethernet Communication	Number of Ports	2-port		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	12 to 48VDC		
	Power Consumption	3.5W @ 12VDC		
	Connector	Terminal Block & DC Jack type		
	Protection	• Redundant Power Input • Protects against V+ & V- reverse		
Software Support	Microsoft Windows	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	-10 to 60°C (14 to 140°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	120x90x24(mm), 350g	165x106x32(mm), 780g	165x106x32(mm), 850g

DevicePort® Advanced Mode Ethernet enabled RS-232/Printer Port Replicator

Model		DPAM11H00	DPAM21H00	DPAP01H00
Product				
Controller		SUNIX DPL2000Q		
Serial Communication	No. of Port	1-Port	2-Port	—
	Board Connector	DB9 Male		—
	Interface	IEEE1284 RS-232		—
	FIFO	1Kbyte Hardware / per port (Hardware)		—
	Signal	TxD,RxD,RTS,CTS,DTR,DSR,DCD,GND, RI		—
	Baud rate	DPKS Series: 50bps ~ 115.2Kbps DPKX Series: 50bps ~ 921.6Kbps		—
	Data bit	5,6,7,8		—
	Stop bit	1,1.5,2		—
	Parity	None, Even,Odd, Space,Mark		—
	Flow Control	RTS/CTS(Hardware) XON/XOFF(Software)		—
	ESD Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		—
Parallel Communication	No. of Port	1-port		
	Board Connector	DB25 Female		
	Interface	IEEE1284 Printer Support		
	FIFO	1Kbyte Hardware / per port		
	Speed	Maximum 2.7MBps		
Ethernet Communication	Number of Ports	2-port		
	Speed	10/100 Mbps, auto MDI/MDIX		
	Connector	RJ45		
	Magnetic Isolation Protection	1.0K Built-in		
Power Requirements	Input Voltage	5 to 12VDC		
	Power Consumption	2.5W @ 5VDC		
	Connector	DC-Jack		
Software Support	Microsoft Windows	DevicePort Manager Microsoft Windows XP/Vista/7/8.1 (32/64 bit) Microsoft Windows Server 2008 / 2012 (64-bit)		
Regulatory Approvals	Hardware	• EUR: CE EN55022 Class B, EN55024 • AS/NZS: C-Tick: CISPR22 AS/NZS • US: FCC Part 15 Class B • JAPAN: VCCI" • TAIWAN: BSMI: CNS13438		
	Software	Microsoft WHQL Certification		
Regulatory Approvals	Operating Temperature	0 to 45°C (32 to 113°F)		
	Operating Humidity	5 to 95% RH (non-condensing)		
	Storage Temperature	-20 to 85°C (-4 to 185°F)		
	Housing	ABS, PC, Metal		
	Dimensions	121x81.93x27(mm), 145g	190x120x27(mm), 283g	190x120x46(mm), 365g

DevicePort Advanced Mode

Product Summary

Model	Mode	Interface	Port	Connector Type	Speed	ESD	Surge	Isolation	Powered COM
DPA-332H00	Advanced Mode	RS-232/422/485	32	RJ45	921.6~50Kbps	15KV	-	-	-
DPA-316H00			16	RJ45	921.6~50Kbps		-	-	-
DPA-308H00			8	DB9M	921.6~50Kbps		-	-	-
DPA-304H00			4	DB9M	921.6~50Kbps		-	-	-
DPA-302H00			2	DB9M	921.6~50Kbps		-	-	-
DPA-X32H00		RS-232	32	RJ45	921.6~50Kbps		-	-	-
DPA-X16H00			16	RJ45	921.6~50Kbps		-	-	-
DPA-X16H00			8	DB9M	921.6~50Kbps		-	-	-
DPA-X08H00			4	DB9M	921.6~50Kbps		-	-	-
DPA-X04H00			4	DB9M	921.6~50Kbps		-	-	5V/12VDC
DPA-X02H00			2	DB9M	921.6~50Kbps		-	-	-
DPA-D08HSI		RS-422/485	8	RJ45	921.6~50Kbps		2KV	1.5KV	-
DPA-D04HSI			4	DB9M	921.6~50Kbps		2KV	1.5KV	-
DPA-D02HSI			2	DB9M	921.6~50Kbps		2KV	1.5KV	-
DPA-M21H00		RS-232/Printer	2/1	DB9M/DB25F	921.6~50Kbps		-	-	-
DPA-M11H00			1/1	DB9M/DB25F	921.6~50Kbps		-	-	-
DPA-P01H00		PRINTER	1	DB25F	-		-	-	-
DPK-308H00	Dock Mode	RS-232/422/485	8	DB9M	921.6~50Kbps	15KV	-	-	-
DPK-304H00			4	DB9M	921.6~50Kbps		-	-	-
DPK-302H00			2	DB9M	921.6~50Kbps		-	-	-
DPK-X08H00		RS-232	8	DB9M	921.6~50Kbps		-	-	-
DPK-X04H00			4	DB9M	921.6~50Kbps		-	-	-
DPK-X02H00			2	DB9M	921.6~50Kbps		-	-	-
DPK-S08H00			8	DB9M	115.2~50Kbps		-	-	-
DPK-S04H00			4	DB9M	115.2~50Kbps		-	-	-
DPK-S04HP0			4	DB9M	115.2~50Kbps		-	-	5VDC
DPK-S04HZ0			4	DB44F	115.2~50Kbps		-	-	-
DPK-S02H00			2	DB9M	115.2~50Kbps		-	-	-
DPK-D08HSI		RS-422/485	8	RJ45	921.6~50Kbps		2KV	1.5KV	-
DPK-D04HSI			4	DB9M	921.6~50Kbps		2KV	1.5KV	-
DPK-D02HSI			2	DB9M	921.6~50Kbps		2KV	1.5KV	-
DPK-M21H00		RS-232/Printer	2/1	DB9M/DB25F	115.2~50Kbps		-	-	-
DPK-M11H00			1/1	DB9M/DB25F	115.2~50Kbps		-	-	-
DPK-P01H00		PRINTER	1	DB25F	-		-	-	-

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