

1: Learn About IBM Watson From the Ground Up

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One front USB 3. These performance statistics can be used to understand the workload characteristics and to prepare for capacity planning. Temporarily transferring these resources instead of purchasing them for your secondary system may result in significant savings. Processor activations cannot be transferred. The CBU specify feature is available only as part of a new server purchase. Certain system prerequisites must be met, and system registration and approval are required before the CBU specify feature can be applied on a new server. Standard IBM i terms and conditions do not allow either IBM i processor license entitlements or IBM i user license entitlements to be transferred permanently or temporarily. These entitlements remain with the machine they were ordered for. When you register the association between your primary and on-order CBU system, you must agree to certain terms and conditions regarding the temporary transfer. After a new CBU system is registered along with the proposed primary system and the configuration is approved, you can temporarily move your optional IBM i processor license entitlement and IBM i user license entitlements from the primary system to the CBU system when the primary system is down or while the primary system processors are inactive. The CBU system can then support failover and role swapping for a full range of test, disaster recovery, and high availability scenarios. Temporary entitlement transfer means that the entitlement is a property transferred from the primary system to the CBU system and may remain in use on the CBU system as long as the registered primary and CBU system are in deployment for the high availability or disaster recovery operation. The intent of the CBU offering is to enable regular role-swap operations. The primary machine must be in the same enterprise as the CBU system. The Power S server is available with six or eight cores in the P10 software tier and four cores in the P05 software tier. You can then transfer any IBM i user entitlements above the minimum, assuming the total IBM i users on the primary system do not require the IBM i entitlement you want to transfer during the time of the transfer. Power S 6-core or 8-core A: Power S 4 core A: If your primary or CBU machine is sold or discontinued from use, any temporary entitlement transfers must be returned to the machine on which they were originally acquired. It uses a typical 2. All four processor cores must be activated, but factory deconfiguration feature is supported. The chargeable feature EP40 is used for these activations. There is no upgrade to increase the cores on this feature. A maximum of four of these features is supported for a system maximum of 64 GB. This is true with any of the storage backplane options selected. Attachment to SANs is supported. Note that 4k byte drives are generally cheaper than 5xx byte drives. One slot is used by one 4-port 1 Gb Ethernet adapter. If the expanded function backplane is chosen, another PCIe port is used, leaving five ports. A qualifying purchase of software, maintenance, services, or training for a participating ISV solution is required when purchasing an IBM i Solution Edition. The Power S Solution Edition feature supports 4-core and feature supports 6-core configurations. Power S system configuration The minimum Power S initial order must include a processor module, base memory is 2x 8 GB DIMMs EM60 with one socket installed, four or two power supplies and line cords, an operating system indicator, a cover set indicator, and a Language Group Specify. Also, it must include one of these storage options and one of these network options: For boot from NVMe: For boot from SAN: A Fibre Channel adapter must be ordered if feature is selected. The minimum defined initial order configuration is as follows: Qty 4, or 14 ft , Drawer 41A Rack: If neither feature EC59 nor feature SAN boot is ordered, then at least one disk unit is required to be ordered. The minimum defined initial order configuration, if no choice is made, when IBM i is the primary operating system, is: IBM i operating system performance: Processor modules A maximum of one processor with four processor cores EP10 , or one processor with six processor cores EP11 , or one processor with eight processor cores EP12 is allowed. All processor cores must be activated. The following defines the allowed quantities of processor activation entitlements. One 4-core, typical 2. A maximum of four processor activations EP40 is allowed. One 6-core, typical 2. A maximum of six processor activation code features EP41

is allowed. One 8-core, typical 2. A maximum of eight processor activation code features EP42 is allowed. Memory upgrades require memory pairs. Plans for future memory upgrades should be taken into account when deciding which memory feature size to use at the time of initial system order. Power supply Four power supplies supporting a tower or rack: Power cords Two power cords are required. The Power S server supports power cord 4. See the feature listing for other options. One is x16 Gen4 full-height, half-length slot CAPI , one is x8 Gen4 full-height, half-length slot with x16 connector CAPI , two are x8 Gen3 full-height, half-length slots with x16 connectors , and four are x8 Gen3 full-height, half-length slots one of these slots is used for the required base LAN adapter. The x16 slots can provide up to twice the bandwidth of x8 slots because they offer twice as many PCIe lanes. One of the x8 PCIe slots is used for this required adapter. These servers are smarter about energy efficiency when cooling the PCIe adapter environment. Note that faster fans increase the sound level of the server. Thus the drives are designated SFF All SFF-3 bays support concurrent maintenance or hot-plug capability. Internally, SAS ports are implemented and provide plenty of bandwidth. Each SAS controller independently runs one of the six-bay sets of drives. This backplane option can offer different drive protection options: RAID 5 requires a minimum of three drives of the same capacity. RAID 6 requires a minimum of four drives of the same capacity. RAID 10 requires a minimum of two drives. It is highly recommended but not required that the drives be protected. If the client needs a change after the server is installed, the backplane option can be changed. Scheduled downtime is required if a service action is required for these integrated resources. For these expanded function backplanes, all bays are accessed by both of the integrated SAS controllers. The bays support concurrent maintenance hot-plug. The arm enables the server to be pulled forward on its rails for service access to PCIe slots, memory, processors, and so on without disconnecting the cables from the server. The one system port is RJ45 and is supported by AIX and Linux for attaching serial devices such as an asynchronous device like a console. If the device does not have an RJ45 connection, a converter cable such as feature can provide a 9-pin D-shell connection. Note that serial devices can have very individual characteristics different pin outs , and the feature may not be appropriate for all possible devices. In this case, the user should acquire an OEM converter cable appropriate for their device. Three USB-3 ports are available for general client use; one is located in front and two in the rear. Additionally, there are two USB-2 ports in the service processor located in the rear of the system. These ports are for limited client use. Expansion drawers complicate the access to vertical PDUs if located at the same height. After the rack with expansion drawers is delivered to the client, the client is allowed to rearrange the PDUs from horizontal to vertical. However, the configurator will continue to consider the PDUs as being placed horizontally for the matter of calculating the free space still available in the rack. The disk is in a protective rugged cartridge enclosure that plugs into the docking station. The rugged removable disk cartridge and docking station performs saves, restores, and backups similar to a tape drive. With IBM i, only one set of twenty-four bays mode 1 is supported. It is possible to change the mode setting in the field using software commands along with a specifically documented procedure. The predecessor EXP24S did not support this mode change in the field. When changing modes, a skilled, technically qualified person should follow the special documented procedures. Hire an expert to assist if you are not familiar with this type of reconfiguration work. These higher-bandwidth cables could support 12 Gb throughput if future adapters support that capability. Copper feature ECE0 is 0. With this specify code, no hardware is shipped. The physical adapters, controllers, and cables must be ordered with their own chargeable feature numbers. There are more technically supported configurations than are represented by these specify codes. The following specify codes communicate to IBM Manufacturing a lower-cost partial configuration is to be configured where the ordered adapters and cables can run only a portion of the SAS bays. The following specify codes are used:

2: Building a PC from the ground up - Forums - CNET

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Text modes have 8 colours, with no high intensity. Some of the CGA emulation is done by the firmware. The IRQ2 handler deals with cursor size and position, and mode selection. The IRQ2 handler checks for a column mode being selected, and substitutes an column mode. The differences are comparatively minor: Text screens have a x resolution. An 8x14 font in a 8x16 cell is used rather than the original 8x8 one. This is a firmware issue rather than hardware. Since there is no composite output, there are no greyscale or colour composite modes. The extra RAM is used as a second bit plane in graphics modes. When it is enabled, the x mode has 16 colours and the x mode has 4. Plantronics modes are enabled by selecting a normal graphics mode and then writing to port 03DDh. Bits 4, 5 and 6 are used: The first plane normally at 0Bh provides the red even bits and green odd bits values. The second normally at 0BCh provides blue even bits and intensity odd bits. The first plane normally at 0Bh provides the red bits; the second normally at 0BCh provides the green bits. Swap planes If one of the two-plane modes is in use, this swaps the two planes over, so that the second plane appears in memory at 0Bh and the first at 0BCh. If bits 4 and 5 are reset, you get normal CGA mode. In all modes other than x, the extra memory is ignored. In x mode, four planes can be used to give a colour display. Most of the is not emulated, so nonstandard modes other than the xx16 mode are unlikely to work. Port 03DDh controls which planes are affected by memory writes in x mode. By default this is set to 0Fh - all planes. Port 03DEh controls which plane is affected by memory reads. By default this is set to 0 blue plane. Port 03DFh is used to set the border colour in the x mode. The PC displays only on its own monitor and has no composite output; so there are no colour or greyscale composite modes. Text modes compare the intensity of the foreground and background colours, and invert the character if the background is brighter. The standard graphics modes all behave as x monochrome. The television output behaves like a fuzzier version of an RGB monitor; there are no special composite modes. For full details, see the technical manual. Attempts to write to this port may trigger the video NMI. Monitor If this is set in text modes, all characters are drawn with a black background. LCD Select x mode. LCD Display characters with non-black backgrounds in inverse video. Last selected CRTC register. Set if NMI was caused by write to port 03D8h. Read state of configuration switches Text modes use an 8x16 font rather than 8x8. Other unusual physical features of the M24 display controller are: The motherboard and the backplane for other ISA cards plug into the controller. If you want to replace the video card with something better, you need a substitute card with the two sockets but no video hardware. The monitor socket is DB rather than DE If a DEB is present, bits 6 and 7 will be 0; otherwise they will be 1. Port 03DEh controls the extra features: Set for x or Zcompatible modes. Set to degauss the monitor colour monitor Bit 2: Set to select alternate character set if an 8k character ROM is fitted. If not in x mode, select whether the first or second 16k of video RAM is being used. Set to 0 for x mode, 1 for x mode. Underline characters with a blue foreground. Use pixel clock from Z board. In the x mode, the display has four sets of rows rather than two. The first set rows 0, 4, 8, 16, There is no composite output, and hence no composite mono or colour modes. Later Olivetti computers at least up to the PCS series support mode 40h even when the remainder of their display hardware is more conventional. Its built-in display hardware emulates CGA. A write to port 03D8h is sufficient to do a mode change. There appears to be additional video hardware at ports 03DDh address and 03DEh data. At startup, the BIOS writes bytes of data to these addresses. The BIOS allows mode 40h to be selected, but this comes out as x rather than x This is set up by the BIOS, which programs the registers slightly differently from normal. One of the changes it makes is to set the character height to 14, and this triggers the support circuitry on the card to switch to the MDA pixel clock and 9x14 font. Later models of the card have the additional ability to use MDA attributes high-intensity, blink and underline in the high-resolution 24x80 mode. This is selected by setting bit 7 in port 03D8h. Online sources are not always clear about how the jumpers on the card should be set.

3: Family +03 IBM Power System S (A)

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Character of the CGA character set consists of a box occupying the entire left half of the character matrix. Character consists of a box occupying the entire right half. Because each character can be assigned different foreground and background colors, it can be colored for example blue on the left foreground color and bright red on the right background color. This can be reversed by swapping the foreground and background colors. Using either character or , each half of each truncated character cell can thus be treated as an individual pixelâ€”making horizontal pixels available per line. This uses extra video memory that is normally unused. However, most games did not do this, perhaps out of fear it would only work on some monitors but not others—a fear that is not unfounded as it was later found that certain compatibles have cards that either glitch or ignore any attempt to put the device into this mode. Composite artifact colors Using the NTSC TV-out instead of an RGBI monitor not only made for less attractive colors, as described above, but as is common with NTSC composite video, the separation between luminance and chrominance is far from perfect, yielding cross-color artifacts, or color "smearing". This is especially a problem with column text: However, programmers soon found out that this flaw could be turned into an asset, as distinct patterns of high-resolution dots would "smear" into consistent areas of solid colors, thus allowing the display of completely new artifact colors. Internal operation[edit] Direct colors are the normal 16 colors as described above under "The CGA color palette". Later demonstrations by enthusiasts have increased the maximum number of colors the CGA is known to produce in a single image to approximately a thousand. Aside of artifacting, this technique involves the text mode tweak which quadruples its rows, thus offering the benefit of 16 foreground and 16 background colors. Resolution and usage[edit] Composite artifacting, whether used intentionally or as an unwanted artifact, reduces the effective horizontal resolution to a minimum of pixels, more for black-on-white or white-on-black text, without changing the vertical resolution. The low resolution of this composite color artifacting method led to it being used almost exclusively in games. Many of the more high-profile titles optionally, sometimes exclusively, offering graphics optimized for composite color monitors. In this mode, dithering was employed to simulate extra colors. Microsoft Decathlon - Top: Game in composite mode, Bottom: Game in RGB mode, Left: Limiting the character display to the upper or upper two scanlines, and taking advantage of the pixel arrangement in certain characters of the codepage , it is possible to display up to colors. This integrated circuit was originally designed only for character-based alphanumeric text displays and can only address a maximum of character rows. To realize graphics modes with scanlines on the CGA, the MC is programmed with character rows per picture and two scanlines per character row. Instead, graphics modes on the CGA first put only the even-numbered scanlines continuously in a first block of video memory, then a second block of odd-numbered scanlines starting at video memory position 8, This arrangement results in additional overhead in graphics modes for software that manipulates video memory. The higher bandwidth used by column text mode results in random short horizontal lines appearing onscreen known as "snow" if a program writes directly to video memory. The BIOS avoids the problem by only accessing the memory during horizontal retrace, or by temporarily turning off the output during scrolling; while causing the display to blink, IBM decided that doing so was better than snow. In the column text mode, the pixel clock is doubled, and all the synchronization signals are output for twice the number of clock cycles in order to last for their proper duration. Some of the software that supported the board was:

4: Color Graphics Adapter - Wikipedia

IBM Graphics from the Ground Up by David E. Simon A copy that has been read, but remains in clean condition. All pages are intact, and the cover is intact. The spine may show signs of wear.

So they turned to us. Those cards use the Matrox G graphics chip, which are pretty limited for 3D use compared to later graphics chips. OTOH, for OpenGL requirements that are not very stringent in terms of speed, the cards might be fast enough to avoid an expensive upgrade to hardware. For more demanding 3D requirements, Xi Graphics would recommend using some of the later Matrox cards. Should any of this be of interest, contact us and we can go from there. The cost of developing graphics chips and the supporting X Window System SW to support the hardware on the platforms with UNIX kernels is such that it is difficult to justify when the sole market is limited to the customers using UNIX of just one of the major computer makers. This approach, while on the surface seems logical and straight-forward, has some nasty details lurking under the surface. Which X server to use? Often the X server is a little dated, and the associated graphics drivers are also dated or reduced to "frame buffer only" performance as was found to be the case with the IBM GXTP. This would seem to explain why the computer manufacturers have basically abandoned the effort, and turned instead to the idea of using the Xorg X servers. P Who needs good graphics on AIX, anyway? Good graphics are only needed on workstations and gamer machines, right? Anyone needing graphics beyond a text-based terminal window should just go to Linux and use Xorg graphics, and the "graphics problem" goes away. Projects, if not killed, are often severely wounded in performance and suffer slipped schedules. Linux and Xorg certainly will not kill Windows, see note at right, above , but the combination is doing damage to the old UNIXs, because the owners of them seem to be unsure how best to handle strong graphics on their systems. Much of this image is already in use around the World. The rest of it is within easy reach, with little to no cost to the computer makers or the GPU makers. Lots of winners with this scenario, but some losers, too. The losers would be the individuals who make a living trying to maintain and support the "free" Open Source Xorg SW on Linux. Who writes the Graphics Driver? Certainly the computer companies are not expected to have the in-house capability to write graphics drivers many years after they abandoned the graphics chip development business. IBM, HP, and Sun all seem to have lost the in-house capability for development and maintenance of the X Window System, which, ironically, they helped to bring about. So the Xorg X server will have to be used, at least for the basic framework of an X server Nvidia makes major changes to the Xorg servers, but uses the basic frame. It would seem so. And the heat goes beyond just graphics, of course. And that meant Linux was a really solid, reliable OS, right? At least for the Apache web server, it was a good thing. Linux is a constantly moving target. We know, since we support some Linux kernels, and have done so since Xi Graphics was founded about fifteen years ago. So we know about Linux changes. If OS stability is of little concern in a system, and if change is considered fun and a "learning experience," then by all means use Linux instead of a UNIX kernel and OS managed by grown ups. The motto of the free open source XFree86 organization as expressed by its President was "just get something out there fast. Quality or stability of the code was not important. Just having something "out there" was paramount. But gotta hand it to Dr. Dawes, It created a lot of jobs. Filled by a lot of folks who could not write an X server or graphics driver if their life depended on it, but posed as Linux experts at top hourly fees, or got hired on by firms to "support the Open Source Community" so the Community would consider the company a "good citizen. Until then, some good, solid graphics on them will allow them to again kick butt.

5: Enhanced Graphics Adapter - Wikipedia

Accelerated-X OpenGL pipeline is hardware-accelerated, built "from the ground up" by Xi Graphics. Xi Graphics can support several ATI and Matrox cards on AIX if blessed ATI, Matrox, and IBM).

6: IBM Computer Graphics Cards for sale | eBay

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The Color Graphics Adapter (CGA), originally also called the Color/Graphics Adapter or IBM Color/Graphics Monitor Adapter, introduced in , was IBM's first graphics card and first color display card for the IBM PC.

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