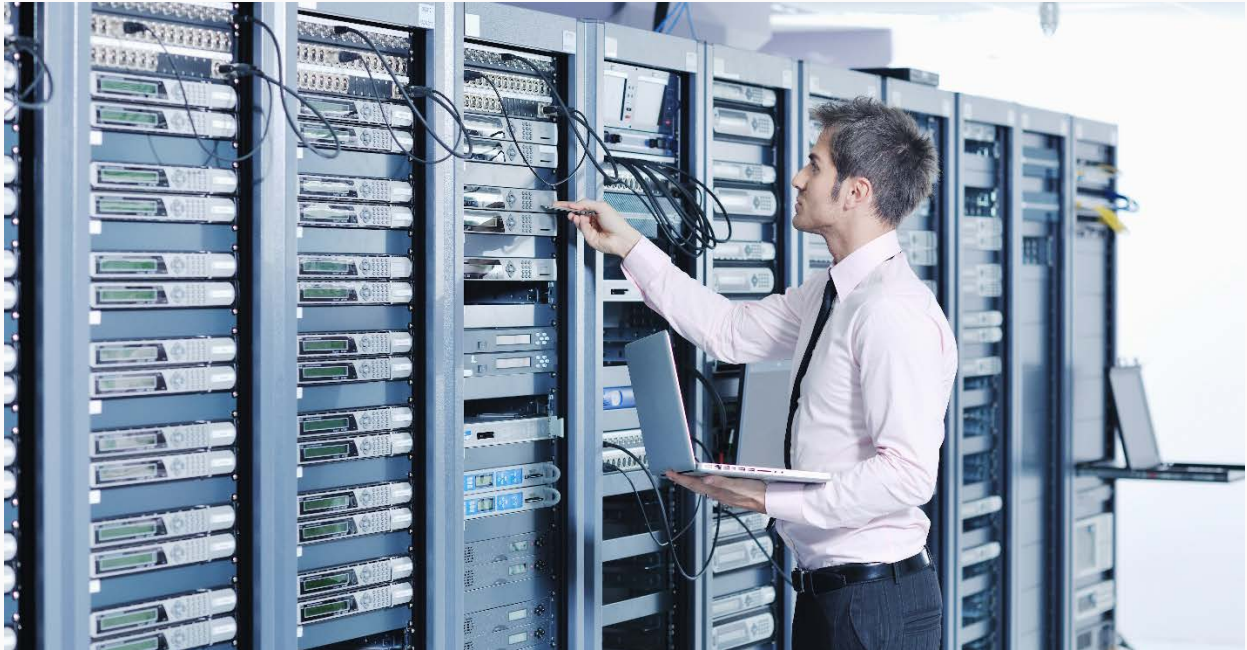**TRENTON SYSTEMS®**

5 STEPS TO A 15+ YEAR RACKMOUNT COMPUTER LIFECYCLE

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Many applications, such as government, military, medical, and embedded system designs struggle with the typical computer product lifecycles. Most commercial-grade computers have a 1-2 year lifecycle before the computer is EOL (End of Life). There are also very few assurances that the rack mount computer is properly revision-controlled so you can rest assured that nothing inside the computer changes the form, fit, or function. Engineers spend a lot of time and energy determining the right specs, validating the product, getting industry certifications, and then finally getting to full production...and in many cases this spec, test, and certification process can take longer than the computer's 1-2 year lifecycle.

So just how should you select a rackmount computer that can have a 15+ year lifecycle with proper revision control?

Start off on the right foot - Component selection is crucial

[Intel recently announced](#) that their newest CPUs and chipsets will be in production for 15 years. Find a processor board supplier that designs and builds their products for as long as possible. At Trenton Systems, we publicly say ["7+ years",](#) but the average processor board tends to have at least 10 years of availability. At the end of the product lifecycle Trenton will notify the customer that the product is going EOL and work to procure parts so that the customer can continue production for many more years to come.

Many commercially available parts (hard drives, 3rd party PCIe cards, etc.) may not have the longevity you need. Make sure you thoroughly interrogate each supplier up front. Don't just take their word for it; ask to see their ISO 9001 quality procedures (EOL process, manufacturing controls, etc.) In most cases, you are not likely to get 15+ year availability out of a hard drive supplier, as an example, so you need to work with your industrial computer manufacturer to understand their test & approval processes (rev control) for alternate parts.

Validate and approve multiple sources for electronic components (capacitors, resistors, I.C.s) so that other sources remain available should one go obsolete. Avoid single sourcing your components.

Select a supplier that retains manufacturing process capabilities for older generation products such as RoHS, leaded versus unleaded, clean versus no-clean, etc.

Future-proof your spec

Most applications that need a 15+ year product lifecycle are not typically concerned about being on the cutting edge of technology, but it's important to ensure that you are not designing in a spec that industry trends show to be dwindling technologies. For example, DVD optical media and traditional spinning hard drives are not likely to be around 15 years from now. Whereas, future revisions of USB and PCI Express are likely to be backwards compatible in the future, making them a safer bet.

Start your spec and test process before the computer platform is released.   Work with the future in mind. Remember, your goal is to get as many years as possible in production, so you don't want to spec in a rackmount computer system from the start that has already been in production for a few years.

Having a working partnership with your industrial computer supplier is crucial. In many cases the computer supplier can get beta / prototype systems in your lab for testing software even before the product is released to the general market. This could potentially add months to a system's lifecycle, and provides the peace of mind that comes from knowing your application software is running on a proven platform.

Ensure you get the same form, fit, and function computer through the whole lifecycle

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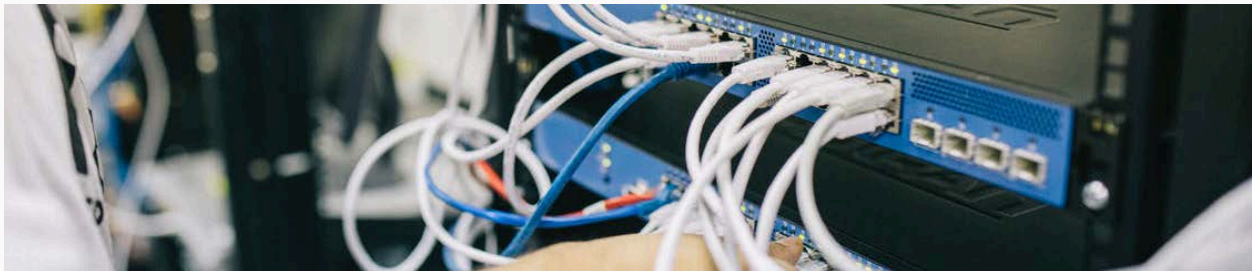
I hear too many stories of industrial computer manufacturers that make significant changes to the product so that they can extend the lifecycle. That's cheating—and more importantly, prohibited by many Military and Government procurement contracts—and it may affect your software or product reliability. I understand that sometimes smaller components (i.e., oscillators) may become obsolete, but at what level does it affect the form, fit, or function of the computer? That's an engineering decision…not an accounting decision. An engineer needs to thoroughly review the specs for the new part and in many cases, bring the prototype part into the lab for testing.

Let your computer supplier know just how sensitive your application is to revision changes. If you need to verify every single change down to the component level then they need a formal system in place to keep you in the loop. Most applications only want/need to be informed if the

change could potentially affect the form, fit, or function of the computer. For example, changing the CPU would have obvious implications on your software and that's an extreme change...but if a resistor on the processor board changes from 5% tolerance to 1% you may not necessarily want to be involved. There is a lot of grey area in the middle so be open and upfront with your computer supplier about your needs.

Don't forget about product warranty

What good does it do to have a 15+ year product lifecycle if the supplier can't repair the products? If, after the warranty period expires, you see fans failing or hard drive crashes, you would be stuck and their 15+ availability doesn't do you much good. Make sure your computer supplier takes repairs and warranty seriously and doesn't just push you into their "latest and greatest" products.

Last time buy process

At some point there will be a definitive EOL part with no form, fit, or function alternate that will force the computer to go EOL. Ensure that your supplier has the proper notification process in place to let you know in advance that the product is going EOL. This should be a formal and

automatic quality procedure to notify active customers with as much notice as possible. Many times this notification process is called a Product Information Notice (PIN).

Work with your supplier to stock EOL parts. In most cases it's just a few parts that are impacting the EOL status. You don't want fully built computers sitting in your inventory collecting dust, your accounting group doesn't want to be liable for the whole product, and you don't want your warranty ticking away. A good rackmount computer manufacturer will work with you and just make you liable for the actual EOL parts and you can come to an agreement on how many more sets of parts will get you the extra years of lifecycle your application needs.

In Conclusion...

Component selection is important if you wish to future-proof your rackmount server and achieve a 15+ year product lifecycle. You must monitor form, fit, and function to ensure no shortcuts are implemented that could negatively impact software performance or hardware compatibility. An experienced industrial rackmount computer manufacturer will have the processes in place necessary to ensure strict revision control and should offer an above industry average warranty. Additionally, experienced, in-house technical support with access to design and test engineers will ensure any issues you encounter can be quickly resolved. Finally, a defined EOL process will provide you with the time necessary to deal with product obsolescence concerns and potential modernization and upgrade pathways.

Trenton Systems has the mechanical and electrical design expertise and obsolescence management processes necessary to become your trusted partner in long-lifecycle, revision-controlled computers and components. If you have lifecycle management concerns, give us a call and speak to one of our Atlanta, Georgia based Engineers about designing or specifying a solution to meet your exact needs.