XPLORE

Total Cost of Ownership

Important considerations when comparing rugged and consumer mobile devices

Mobile computing is becoming more prevalent in the enterprise today as consumers ranging from executives in the C-Suite to forklift operators in a warehouse use a mobile computing device to carry out their jobs. Mobility is the key to advancement, power, and efficiency for both consumers and companies.

The introduction of the Apple iPad® propelled the popularity of tablet computers in the enterprise, even though rugged tablets have been used by global industries for much longer. Recent research from VDC indicates that the trend towards rugged tablet adoption will only continue to grow between now and 2020 as other rugged form factors lose traction in professional environments. That means that businesses now have two key questions to consider:

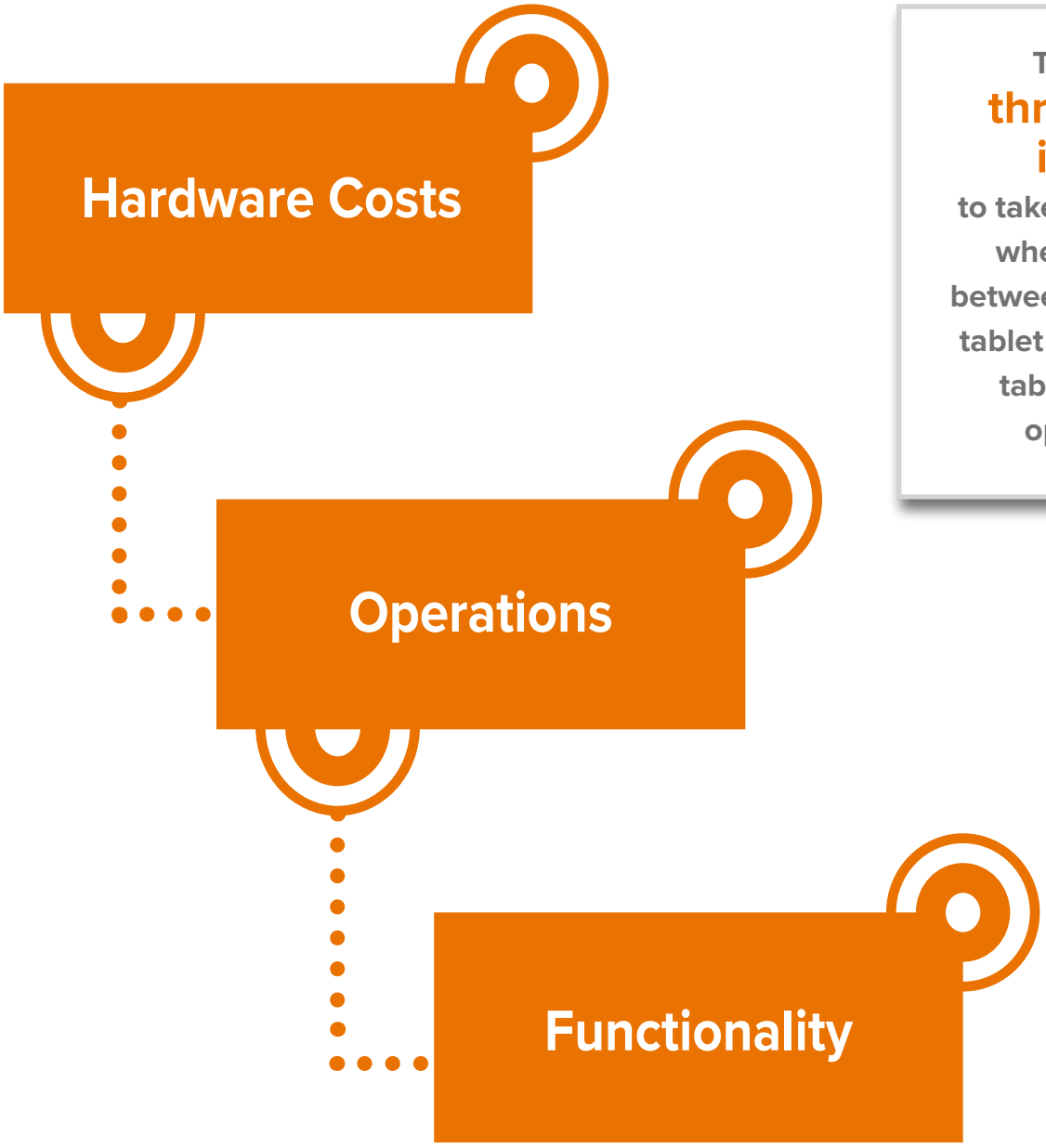
1. Will the tablet computer become the default device for my company's mobile users?
2. How will the deployment of tablet computers in the enterprise affect my company's bottom line?

There is a growing segment of the workforce whose jobs demand mobility in their computing and improved technology, including more durable, powerful, and lighter tablets, have acted as a driving force to feed this growing demand. So the answer is yes: tablet computers do seem to be on a path to becoming employees' default devices, and if you are considering a mobile tablet platform for your personnel, you need to consider the costs that can be associated with deploying a large number of computers in a non-consumer environment.

When integrating tablets as a business solution, the Total Cost of Ownership (TCO) is a much more important consideration than just simple hardware costs. There are many factors that affect TCO—maintenance, breakdown costs, and peripheral integration, to name a few—and if you want to make the best long term investment into mobile technology for your business, you should consider all of these factors before making a purchasing decision. While a consumer tablet might seem like the cheapest option in the short term, in the long term, non-rugged products can end up slowing down operations and costing much more. This white paper is intended to help you understand all the issues that affect a mobile device's TCO, so you can determine the most cost effective device over its long term life cycle.

Deciding on a Rugged or a Consumer Tablet

For some businesses, a consumer tablet might work fine. However, businesses that operate in harsh environmental elements, on factory floors, in the oilfield, or other "rugged" areas need a computer that not only can withstand those conditions, but can also run the necessary business applications and connect with other equipment. There are three main factors that can affect TCO, and when choosing between a rugged and consumer tablet, they should influence your decision.



There are **three main issues** to take into account when deciding between a consumer tablet and a rugged tablet for your operations

Consumer vs. Rugged: Hardware Costs

Certain mobile employees work in situations that require computers capable of withstanding exposure to frequent vibrations, extreme temperatures, fluid contaminants, dust and hazardous situations, such as those where flammables are present. For this reason, consumer tablets that may have appeared attractive initially, will fall short of meeting minimum standards.

Not only do consumer devices fail up to four times more often than enterprise-class devices, but each failure results in longer stretches of lost productivity and more IT support time to resolve. Companies that forgo TCO analysis, or that underestimate the hazards to which their mobile devices will be exposed, will often find that their tablet purchases fall short of actual rugged needs. Even among companies who use TCO analysis, many dramatically underestimate the failure rates, replacement costs and productivity impact that computer breakdowns can have on their business. However, the potential for cost savings and increased productivity is driving the rise of rugged device deployments in both "heavy-duty" industrial enterprises and traditional field service environments such as:

- Field Service
- Transportation and Logistics
- Warehousing, Manufacturing and Distribution
- Oil & Gas and Mining
- Public Safety
- Military and Defense
- Utilities

If you are in an industry where the hazards exceed your tablet's level of durability then, in the long term, you will end up paying more. In these cases, a rugged computer is the better choice because it is designed specifically to withstand harsh challenging conditions. These are ultra-mobile, tough, and customer-engineered devices, specifically designed for use in mission-critical applications.

Of course, when purchasing a tablet, cost is an important factor to take into account. But hardware cost should not be the only number to factor into your financial considerations. The rugged ratings of a tablet will help determine how long the tablet will last, and under which conditions, so you can ensure your investment lasts 3-5 years minimum versus 1-2 years maximum. Rugged tablets are rated by:

- IP Testing
- MIL-STD-810G Tests

The Ingress Protection (IP) rating specifies the environmental protection provided by the computer's casing. The IP rating consists of two numbers. The first denotes protection against dust and the second denotes protection against liquids. The higher the number, the more protection offered, with a rating of IP68 being the highest available. VDC research states that for a tablet to be considered, "fully rugged" it must have an IP rating of at least IP54. However, for many industrial sectors, an IP rating of IP65 is ideal—fully protected against dust and water spray from all directions.

The MIL-STD-810G standards include a variety of tests that measure a computer's resilience against a number of environmental stressors. VDC requires tablets to pass these tests to be considered "fully rugged." The tests gauge a tablet's performance in a range of environmental extremes, including those posed by extreme temperatures, rain, humidity, sand, salt fog, drops, shocks, and altitude variations.

Once you begin researching rugged tablets, you will find that there are a number of suppliers of these types of computers. Rugged tablets are not new. Companies, government agencies and the international militaries have used these computers for decades. And, as technology and software has evolved, rugged tablet computers have gained extraordinary power, performance, and strength, with the benefit of long-term savings for you and your business.

Consumer vs. Rugged: Operations and Functionality

Operations

Presumably the most important features on a rugged computer is the operating system and applications, and what can and can't be installed, managed, updated, upgraded and used every day by mobile employees. Some tablet PCs operate using either Microsoft® Windows® OS or Android® OS and applications, thereby streamlining enterprise administration and management while providing end users with software that is already familiar to them. In the present state of tablet computing, many more tablets feature operating systems that might be sufficient for consumer use, but are less optimized for business purposes and are less easy to integrate with business applications.

Choosing the right OS is also key for versatility and reduction of project risk.The largest number of software and application vendors for enterprise build their tools to be compatible with Windows or Android. Other operating systems risk running into project roadblocks when necessary applications simply don't integrate. This can waste time, or cost a company money if they have to hire developers to retool necessary applications.

It's important for the operating system to be as robust as possible to support the software that you will want your employees to use. Currently, there are few consumer tablets with the ability to operate as fast and effectively as their rugged counterparts. Consumer tablets are used more for web browsing and media applications, a major difference from rugged tablets, which are full PCs with power and integration capabilities tailored for field work.

Functionality

It is important to consider whether to accessorize a tablet with add-ons or to choose a completely integrated solution that boasts the capabilities you need as standard features. Almost all mobile devices today have add-on capabilities. Some industries require multiple add-ons such as a barcode scanner and a RFID reader. The problem with add-ons is that they are separate hardware components, and the more add-ons needed the more potential for problems. It's a widely accepted fact that failure rates for accessories and peripherals added to consumer tablets are higher than those of ruggedized mobile computers that come equipped with all components built-in. Bolting on these peripherals can increase the risk of downtime, and in large enterprises, managing tablet PCs, add-ons, and multiple ports and connectors can become a logistical and inventory management challenge.

One of the benefits of rugged tablet computers is that they have been designed from the ground up for business purposes, usually with integrated components and accessories that seamlessly work together. Rugged computers often integrate built-in barcode and RFID scanners, numeric keypads, GPS, WWAN communications and high-resolution cameras. Some rugged tablets even have the ability to remove the back of the unit to make specific repairs and changes right in the field, which reduces costly downtime for companies. In some situations, tablets must be mounted in vehicles such as forklifts, trucks, cars, ambulances, etc. The actual mounting system can be designed and integrated specifically to work with the rugged tablet to provide a single reliable system for the task at hand.

Calculating TCO for a Rugged Tablet

The Total Cost of Ownership (TCO) is a financial estimate that helps enterprise managers assess the costs that are related to the purchase of any piece of capital equipment. Ideally, a TCO assessment will offer a final statement that reflects tangible as well as intangible costs associated with the purchase. Both are important in making the TCO assessment. While the tangible costs are readily apparent (e.g. the cost of the device, software, installation, training, etc.) the often hidden intangible costs are frequently far more important in the long run.

It may be tempting to look solely at the actual dollar cost of a rugged tablet vs. a consumer tablet, where the prices can vary by thousands of dollars. However there are more important criteria to consider when evaluating which tablet is best for employees, which is why potential buyers should always consider tangible and intangible costs.

Tangible & intangible costs that determine the Total Cost of Ownership

Tangible Costs

- *Hardware Purchase Price*
- *Upfront Fees*
- *Installation Costs*
- *Integration Costs*

Intangible Costs

- *Employee Downtime*
- *Impact on Customer Service*
- *System Maintenance*
- *Upgrades*
- *Employee Morale*
- *Data Loss*

Calculating TCO for a Rugged Tablet

Hard Costs vs Soft Costs

It is vital to have proof of the return on investment (ROI) and a model to validate the TCO of mobile computing. Companies simply cannot invest in mobility and tablet PCs without a clear picture of both short-term and long-term costs. Oftentimes TCO analyses do not look carefully at the soft costs and variables that can impact the productivity of their employees. Rather, the "I can buy four consumer tablets for the price of one rugged tablet" mindset tends to be the primary consideration. However, this train of thought has proven to be very short sighted with far reaching consequences.

A recent study produced by VDC reported that over 50% of the total cost of using an enterprise mobile computing device is the result of lost worker productivity due to device failure. VDC also reported that the average annual TCO of ruggedized "large form factor devices"--which would include rugged tablets--is $3,423. And their analysis takes into consideration not only the cost of the equipment or "hard" costs, but the equally important repercussions costs (such as lost productivity from employees) as one that has significant repercussions.

VDC has estimated that mobile employees on average lose 76-101 minutes of productivity when mobile devices fail, and this loss of productivity can represent as much as 52% of a mobile device's TCO. The previous chart referred to tangible and intangible costs. Another way to look at this is through hard vs. soft costs:

hard Costs

- *Hardware* (Mobile Platforms, Peripherals, etc.)
- *Software* (upfront fees, license fees, development costs)
- *System Design & Integration* (upfront fees, license fees, development costs)

soft Costs

- *Training* (initial user training, ongoing user training)
- *Operational* (system maintenance, 3rd party technical support, internal technical support, upgrades, application management)
- *Downtime* (lost manpower/wages; lost revenues; HW replacement)

Facts & Figures on Rugged Tablet TCO

In VDC's comparison[1] of rugged tablets vs. consumer tablets, a significant TCO savings with rugged tablet computers became evident. According to the study, the average annual TCO for a rugged device (large form such as tablet PC) is $3,423. The TCO for a non-rugged device is $7,330. Furthermore, in a five year period, the average of rugged vs. non-rugged is $17,113 compared to $36,648. Again, that is a 72.7% difference in favor of rugged tablet PCs.

Additional research in this area shows:

- Upfront cost of hardware adoption accounts for only 9.8% of mobile computer TCO, which means that over the long-term, rugged computers cost less than non-rugged computers.
- TCO falls with each level of ruggedness, so that the more rugged the computer, the lower the TCO over time. The difference can amount to more than $3,900 per device, per year.
- On average the TCO for rugged computers over three years is 15% lower than that of non-rugged computers. That represents hundreds of dollars of savings per unit.
- Lost productivity is responsible for over half of the TCO for mobile devices. The other factors responsible for TCO include software and IT support issues, ease of use, power management and administrative control.

Failure costs are a critical portion of TCO calculations, but they can be difficult to quantify. Independent research has indicated that when a non-rugged mobile computer spends more than 40% of its time outside on streets, in the warehouse or on the manufacturing floor, making deliveries, etc., the annual failure rate can soar to more than 30% per device. Companies generally do not want to see one-third of their computers in the field being sent in for service or replaced entirely. The rugged tablets that are available today have much lower failure rates; specifically, less than 4% a year. The cost of failure rates rises yearly as well, with some estimating that each instance costs more than $3,000. Projected costs have this increasing over 30% in the next three years. Thus, the reduction of computer failures is a key consideration for TCO, and if an enterprise has a number of mobile employees, these costs can quickly add up.

There is a growing recognition that TCO for rugged devices can actually be far less than consumer devices. For example, Group Mobile, a reseller of ruggedized computing products, recently reported a 100% year-over-year growth in shipments of rugged tablets between 2015 and 2016 compared to the 35% year-over-year increase experienced between 2014 and 2015.

The increase surprised the company executives who noted that "the astute IT decision-maker recognizes the differences in the various types of tablets on the market and chooses the one that best fits the intended computing environment and the end-user needs and usage patterns. But, we have heard concerns from customers that elected to acquire commercial or even consumer devices for their mobile workforce that these decisions were generally price driven but neglectful of total Return on Investment (ROI)."

"The average life expectancy of a consumer tablet in a mobile or field work environment is probably around 90-180 days. Business-grade off-the-shelf tablets seem to perform better, but still are not designed for in-field use. Rugged tablets are specifically designed and built for use in a vehicle or in the field. Some of our customers deployed their rugged devices four to six years ago and they are still in active use."

About Xplore Technologies

Xplore is The Rugged Tablet Authority™, exclusively manufacturing powerful, long-lasting, andcustomer-defined rugged tablet PCs since 1996. Today, Xplore offers the broadest portfolio of genuinely rugged tablets –and the most complete lineup of rugged tablet accessories –on Earth. Its mobility solutions are purpose-built for the energy, utilities, telecommunications, military and defense, manufacturing, distribution, public safety, healthcare, government, and field service sectors. The company's award-winning mdilitary-grade computers are also among the most powerful and longest lasting in their class, builtto withstand nearly any hazardous condition or environmental extreme for years without fail. Visit www.xploretech.comfor more information on how Xplore and its global channel partners engineer complete mobility solutions to meet specialized workflow demands.

*VDC Research Q2 2015
**VDC Research 2014

Footnotes:

1. David Krebs, (2010). Total Cost of Ownership Models. 3rd ed. : VDC Research.