



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 long been used by industries. Recent research from iGR1 confirms this: global tablet shipments in the first quarter of 2012 reached a staggering 52.5 million units, from 29.9 units shipped the previous year. As the tablet revolution unfolds, businesses now have two key questions to consider:

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

Enterprises do seem to be trending in the tablet direction, and businesses that don't risk losing a competitive edge by lagging behind in productivity and information access. Forrester reports that in 2012 "82% of firms expect to support tablets" for employees, and also predicts that "three-quarters of a billion tablets will be in use by 2016." Their analysis also states that "the rise of tablets will drive the number of anytime, anywhere information workers up. Tablets enable

access from more locations and bring relevant and useful apps to make employees more productive."

These trends indicate 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 computer do seem to be on a path to become 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.

For integrating tablets as a business solution, 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 prospective enterprise tablet users understand all the issues that affect a mobile device's TCO, so they can determine the most cost effective device over its the long term life cycle.



DECIDING ON A RUGGED OR A CONSUMER TABLET

For some businesses, a consumer tablet might work fine. However, businesses that require work in the elements, on factory floors, in the oilfield, or other “rugged” areas need a computer that not only can withstand those conditions, but also come with the capabilities necessary to run business applications and connect with other equipment. There are three main factors that vary widely depending on industry sector that can affect TCO, and when choosing between a rugged and consumer tablet, they should influence your decision.

**HARDWARE
COSTS**

OPERATIONS

FUNCTIONALITY

**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 that can withstand vibrations, heat, cold, liquids or specific hazardous situations. In those cases, consumer tablets fall short. Certain industries have found that consumer tablets may look attractive initially, but further investigation reveals mounting failure rates over long term use.

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. Often companies forgo TCO analysis and opt for consumer-grade devices because they underestimate the hazards to which their mobile devices will be exposed, and as a result purchase tablets that fall short of their rugged needs. Even among companies who use TCO analysis, many dramatically underestimate the failure rates, replacement costs and productivity impact computer breakdowns can have on their business. The potential for savings and increased uptime by adopting rugged instead of consumer tablets has resulted in more and more rugged devices are being heavily deployed in “heavy-duty” industrial enterprises, such as:

- Direct Store Delivery
- Field Service
- Transportation and Logistics
- Warehouse, Manufacturing and Distribution
- Oil & Gas and Mining
- Public Safety and Defense

If you are in an industry where the hazards exceed the level of durability of your tablet, 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 be sure you get the best deal possible.

Rugged tablets are rated by:

- IP Testing
- MIL-STD-810G Tests



The Ingress Protection (IP) rating specifies the environmental protection provided by computer's casing. The IP rating consists of two numbers. The first denotes protection against solid objects 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 industries, 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 variety of environmental and physical tests. VDC requires tablets to pass these tests to be considered “fully rugged.” Among the tests are those that demonstrate the effects of altitude, extreme temperatures, rain, humidity, sand, dust, shock, vibration and numerous other conditions.

Once you begin researching rugged tablets, you will find that there are a number of suppliers of these types of computers. Rugged Tablet PCs are not new. Companies, government agencies and the US military have used these computers for decades. And as technology and software has evolved, rugged tablet PCs 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



FUNCTIONALITY

It is important to consider whether to accessorize a tablet with add-ons or to choose integration. Almost all mobile devices today have add-on capabilities. Some industries require multiple add-ons such as a bar code scanner and a receipt printer. The problem with add-ons is that they are separate hardware components and the more add-ons needed the more potential for problems such as complete device failure and significantly reduced battery life. 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. 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 PCs 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 bar codes and RFID scanners, numeric keypads, GPS, WWAN communications and color 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.

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 Microsoft® Windows® 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.

Microsoft® Windows® 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. 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.





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 look solely at the actual dollar cost of a rugged tablet vs. a consumer tablet, where the prices 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

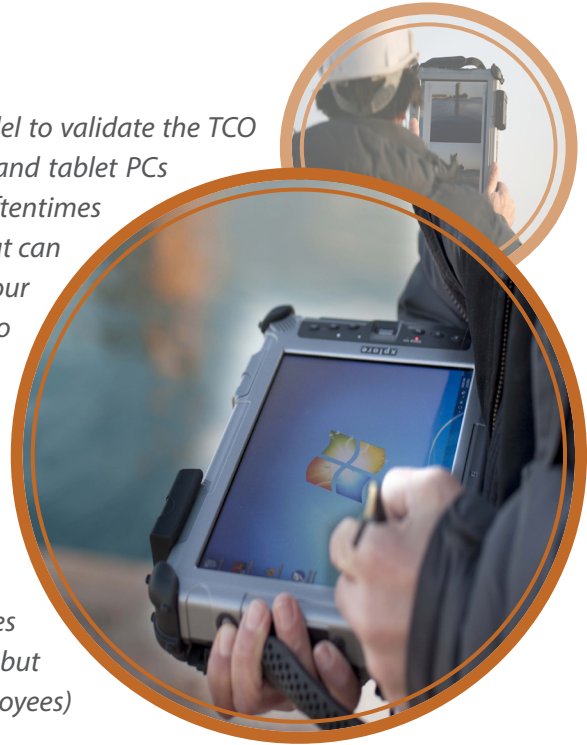


CALCULATING TCO FOR A RUGGED TABLET

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 can be proven to be very short sighted with far reaching consequences.

A recent study produced by VDC1 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 "soft" 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.¹ 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.)	SOFT COSTS	Training (initial user training, ongoing user training)
	Software (upfront fees, license fees, development costs)		Operational (system maintenance, 3rd party technical support, internal technical support, upgrades, application management)
	System Design & Integration (upfront fees, license fees, development costs)		Downtime (lost manpower/wages; lost revenues; HW replacement)



FACTS & FIGURES ON RUGGED TABLET TCO

In VDC's study¹ of comparing TCO of rugged tablets vs. consumer tablets, a significant TCO savings with rugged tablet PCs 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 1/3 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 total cost of ownership for rugged devices can actually be far less than consumer devices. For example, Group Mobile, a reseller of ruggedized computing products, recently reported a 35% year-over-year increase

in shipments of rugged tablet PCs from January through September 2011 compared to the same period in 2010.²

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 work force these decisions were generally price driven but neglectful of total Return on Investment (ROI)."²

"The average life expectancy of a consumer tablet in a mobile or field work environment is probably around 90-180 days. Commercial 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."

INDUSTRIES AND APPLICATIONS FOR XPLORE RUGGED TABLETS

Manufacturing & Distribution

- Inventory Management
- WIP
- Quality Control
- Parts Tracking & Inventory
- Data Collection
- Shipping and Receiving
- Supply Chain Management

Energy

- Asset Management/EAM
- Compliance and Reporting
- Resource and Materials Management
- Safety and Workforce Management
- Data Acquisition and Processing
- Site and Equipment Condition Assessments
- Spill and Incident Response
- GPS tracking/Geotagging

Transportation

- GIS / Mapping
- Computer Aided Dispatch
- Fleet Management
- Logistics

Field Services

- Work Order Management
- Computer Aided Dispatch
- GIS / Mapping
- Workforce Automation
- Service Upgrades
- Inspections

Public Safety

- Electronic Ticketing
- Electronic Patient Care Records Management
- Mobile Field Reporting
- Mobile Incident Command
- Emergency Response

Military

- Situational Awareness
- Flight Line Maintenance
- Special Operations
- Command and Control
- Mission Planning
- Unmanned Aerial Vehicles
- Military Police Operations

ABOUT XPLORE TECHNOLOGIES

Xplore Technologies Corp., maker of the most rugged tablets on Earth, has been in the business of developing, integrating, and marketing industrial grade rugged tablets for our customers in the Energy, Utilities, Manufacturing and Distribution, Public Safety, Field Services, Transportation, and Military sectors for over 15 years. Xplore Tablets use the most powerful and modern processors and components and are tested more vigorously for shock, thermal, vibration, impact, ingress and emissions than any other PC in the industry. Xplore's products enable the extension of traditional computing systems to a range of field and on-site personnel, regardless of location or environment. Xplore's portfolio of products is sold on a global basis, with channel partners in the United States, Canada, Europe and Asia Pacific. Xplore's main offices are located in Austin, Texas with regional sales offices throughout the U.S., Canada and Europe. Xplore is a public company that trades under the symbol XPLR on the NASDAQ Stock Exchange.



FOOTNOTES:

1. Anita Li (2013). Tablet Shipments Hit Record Levels While Apple's Market Share Declines. [ONLINE] Available at: <http://on.mash.to/WsEP9o>. [Last Accessed 2/5/2013].
2. JP Gownder (2012). ENTERPRISES ARE ABOUT TO GET TABLET FEVER. HOW CAN TECH VENDOR MARKETERS REACH THEM?. [ONLINE] Available at: <http://blogs.forrester.com/node/8260>. [Last Accessed 2/5/2013].
3. David Krebs, (2010). Total Cost of Ownership Models. 3rd ed. : VDC Research.
4. Group Mobile (2011). Group Mobile Experiences 35% Increase in Rugged Tablet PC Sales. [ONLINE] Available at: http://www.groupmobile.com/Tablet_Growth_PRNov2011.asp. [Last Accessed 2/6/2013].