$2.5 Million Savings After Implementing Asset Management Services

Test assets, including oscilloscopes, network analyzers, and spectrum analyzers, make up a large portion of a company’s financial investment. This investment comprises the equipment’s capital expense (capex) and its associated operating expense (opex) — the cost of keeping a piece of equipment over its useful life. Costs include general maintenance, calibration, repair, and depreciation. One of the most effective ways for a company to reduce its total cost of test asset ownership and improve return on investment (ROI) is to optimize test asset usage.

A leading semiconductor company focuses on the development of chipsets in mobile communications and the Internet of Things (IoT) products. It has multiple research and development and manufacturing sites around the world. With the rapid development of the communications industry, this company has experienced huge market demand, stable economic growth, and favorable policies, resulting in the rapid expansion of its business. Consequently, its test labs grew to thousands of pieces of test equipment.

The semiconductor customer wanted to report improved ROI metrics of its test assets to its parent company to justify its investment of test assets per program.

To help the customer address this challenge, Keysight provided Test Asset Optimization Services. The services include Keysight PathWave Asset Advisor, a new IoT-based software platform with unique capabilities such as measuring instrument utilization and health in real time.

Company:
• Leading fabless semiconductor researcher and manufacturer

Key Issues:
• improve ROI
• manage large volume of test equipment
• invest in the latest technologies

Solutions:
• use state-of-the-art software to manage assets
• monitor utilization and health in real-time
• share assets across teams

Results:
• saved $2 million by reallocating 30 underutilized assets
• avoided $500,000 capex by sharing three test systems
Key Issues: Improving ROI and Managing Test Equipment

Test equipment is often the most significant capital expense for technology companies. Thus, the company was keen on knowing the ROI of the test assets per program to justify future equipment purchases. Like other players in the industry, the semiconductor company is under enormous cost pressure and wanted to optimize capex spending to improve ROI. It did not realize that optimizing test asset use is one of the most effective ways to improve test investment.

The company also experienced a growing number of test assets, thanks to its positive business results. It discovered that managing these assets is a significant logistical challenge. For years, the company performed an inefficient manual inventory count that took valuable resources away from performing other key tasks. Management questioned the accuracy of not only performing accurate counts across so many teams, buildings, and sites but also the estimate used for proxy utilization rates. The inventory team calculated this proxy by estimating how often engineers and technicians used the equipment. Management was unable to provide solid evidence about whether instruments were underutilized and available for other teams to share. This lack of information created internal conflict and mistrust between departments and project teams.

In addition, management knew that an unplanned instrument failure would disrupt the company’s teams and would cause project delays. Engineers would scramble to find replacement assets and request costly priority repair purchase orders. Managers and engineers wished for a way to measure instrument health.

Solutions: On-Premises and Cloud Software and Services

Keysight provided a comprehensive suite of Test Asset Optimization Services with the PathWave Asset Advisor software at the core. Test Asset Optimization Services provide an on-premises version or a cloud-based solution, comprising three parts:

- Track and Control features help customers see accurate asset inventory and ensure calibration compliance management.
- Utilization and Health features provide real-time data on true utilization rates and the health condition of the equipment.
- Loan Pool features enable equipment sharing across teams to optimize test asset usage.
Keysight first verified an accurate inventory of key assets and recorded the information in PathWave Asset Advisor Track and Control software. Then, to measure utilization and health of critical assets, Keysight connected individual instruments to either agents or power-line utilization modules (PLUM). A PLUM is an external device that monitors utilization by measuring power fluctuations and GPIB traffic. It monitors health by measuring temperature, humidity, shock, current, and voltage. Windows-based instruments use agents, and instruments without Windows use PLUMs.

Because of certain security concerns, the customer chose the on-premises version of PathWave Asset Advisor software. Keysight connected more than 300 agents and PLUMs to test assets distributed across multiple labs and buildings at one of the company’s large sites. PLUMs and agents monitor the utilization and health parameters of an instrument in real time. The data from these 300 assets flowed in real time to the PathWave Utilization and Health software. As with most large companies, the customer had unique needs regarding how to display and share data. Keysight customized the data dashboards to meet specific requirements defined by management.

**Results: Reduced Costs and Improved Utilization Rates**

After six months of collecting instrument data in PathWave Asset Advisor, several significant results created considerable opportunities to optimize asset usage and reduce cost.

**Result 1: Improved utilization rate and avoided capex of $2.5 million**

The customer discovered 30 underutilized instruments occupied by one of the project teams, as indicated in Figure 1. The value of these 30 instruments was approximately US$2 million. With this observation, the asset coordinator provided solid evidence to the project team and reallocated those instruments to other teams that needed them. The reallocation saved a potential $2 million in capex for new instruments. This savings is based on the actual instrument value of the 30 model numbers derived from the Track and Control feature.

![Figure 1: Real-time utilization rate chart for individual assets](image-url)
Another project team requested a budget for three new multivendor systems. The asset coordinator found three underutilized multivendor systems, as indicated on the left side of Figure 2. Process adjustments improved the utilization of these three systems, as shown on the right side of Figure 2. Avoiding the purchase of new test systems saved an additional $500,000 of capex.

![Utilization rate improvement after PathWave Asset Advisor reporting underutilized](image)

**Figure 2: Utilization rate improvement after PathWave Asset Advisor reporting underutilized**

**Result 2: Preserved instrument uptime and avoided repair cost**

With the health monitoring function of PathWave Asset Advisor, the project lead identified voltage issues on a set of instruments in one of the labs. Figure 3 shows a screenshot of the readings of four health parameters of a single instrument. Inside the red rectangle, the small white dot indicates the current reading, and the two blue lines show the minimum and maximum readings within a specified period. The manager was able to quickly identify that the voltage of this particular asset exceeded the maximum threshold (237.5 V), which can cause permanent damage to the instrument. The repair cost for this instrument could be about $3,500, and the project delay could be two weeks while waiting for the repaired unit. If voltage anomaly impacted multiple instruments, the opex impact could easily exceed tens of thousands of dollars from additional project delays and repair costs. The manager immediately fixed the voltage issue, avoiding downtime and associated expenses.

![Overvoltage observed on one of the assets](image)

**Figure 3: Overvoltage observed on one of the assets**
Result 3: 144 person-hours saved per year

The company previously hired dedicated resources to count inventory and manage assets manually. A full-time person took an average of 12 hours per month, or 144 hours per year, to manage equipment inventory. After deploying PathWave Asset Advisor, there was no need to perform a manual inventory count, saving the company time and money.

In summary, the solution saved valuable resources, prevented a possible instrument failure, improved utilization rates, and reduced costs. Today, the Test Asset Optimization Services continue to provide a large amount of in-depth data for future analysis and ROI improvements.

Related Information

For more information, please visit www.keysight.com/find/assetoptimization.

Learn more at: www.keysight.com

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