

Achilles Test Software from GE Digital

Test network robustness early in the product development lifecycle



Robustness testing for OT devices

As technology continues to drive towards more open and connected networks, mission-critical systems, including those in the oil & gas, utility, waste water, chemical and critical manufacturing industries, are becoming increasingly vulnerable to cyber attacks. This has led to greater awareness from system operators around the security and robustness of the devices they deploy in these environments.

Achilles Test Platform (ATP) from GE Digital was designed to find vulnerabilities in the devices used in critical infrastructure. Achilles Test Software (ATS) from GE Digital is the software version of ATP in a more economical form factor. ATS runs as a VM, allowing it to be deployed on laptops and general purpose PCs, which makes it easier to deploy throughout the organization. By making the tool available to more members of the development team, Achilles testing can be performed earlier in the product development lifecycle, resulting in bugs being discovered more quickly.

"Achilles testing provides welcome reassurance to the industrial automation community that the products they purchase are highly secure and reliable, conforming to a comprehensive set of requirements, in order to achieve their globally recognized certification"

- ICS Triplex



01 Increase productivity and effectiveness

Achilles test automation dramatically improves test efficiency and offers more thorough testing, which provides customers with secure, reliable, and robust products.

02 Minimize the cost associated with escaped bugs

Identifying vulnerabilities early in the lifecycle can reduce the risk of experiencing an issue in the field, which can be costly. ATS can also minimize the need for patch distribution and customer service as well as improve customer retention by avoiding quality problems.

03 Reduce time-to-market

Identifying vulnerabilities earlier on in the development cycle allows for less time spent in QA and faster time-to-market. This leads to creating high market share, more time for product sales, and quicker revenue recognition.

04 Prepare, align, and conform with industry standards and requirements

Get ahead of compliance mandates as operators of critical infrastructure are demanding their customers provide reliable, secure devices for deployment. Achilles Test Platform is the test tool used for the industry recognized Achilles Communications Certification program. Use robustness testing and Achilles Communications Certification as a product differentiator.



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Achilles Test Software differentiators

01 Comprehensive testing of industrial control specific protocols

ATS has extensive coverage for control protocols, with tests designed specifically for devices found in critical infrastructure. Extensive experience with both manufacturers and operators of critical infrastructure devices has allowed for tests that specifically address real life scenarios in the field.

"Ethernet-enabled industrial networks and control systems are increasingly exposed to new cyber risks that can jeopardize process integrity and result in unnecessary downtime. Achilles has proven to be the most effective tool in the market at identifying and mitigating potential weaknesses and helps our development teams continuously improve product robustness and meet the cyber security expectations of our customers."

- Emerson

02 Perform testing outside of the QA Lab

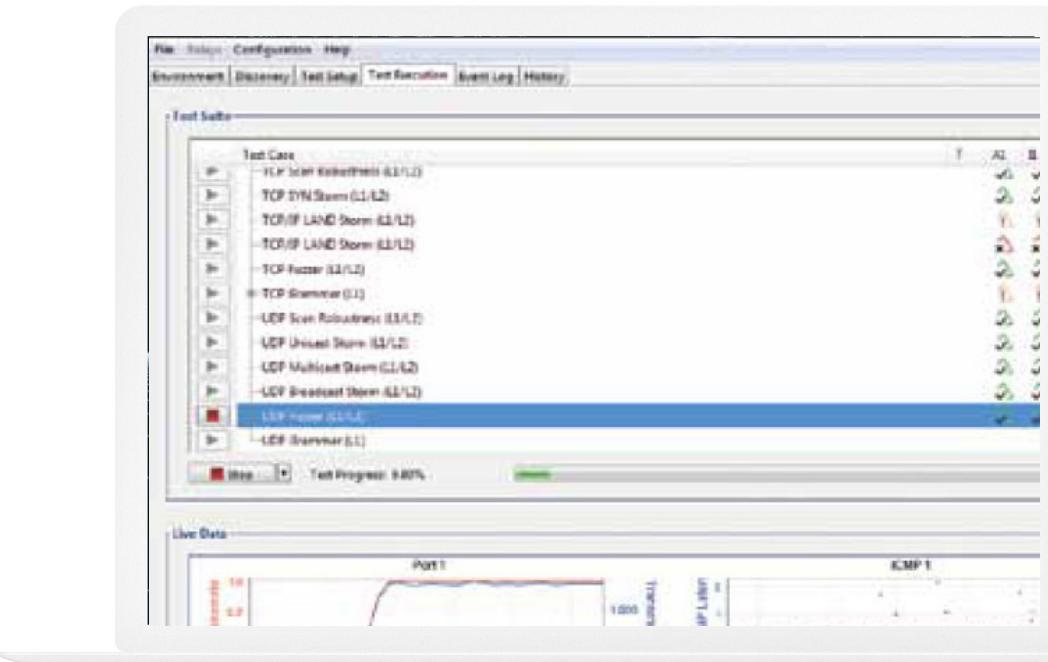
Provide your design and development teams with ATS to enable software testing earlier in the development lifecycle. Engineering teams can test candidate hardware and software platforms before submittal to final QA and lab testing. Simplify the bug fixing process by exporting tests from the Achilles Test Platform and importing them into Achilles Test Software for easy reproduction.

03 Extensive summary and detailed reporting

Detailed fault reporting allows you to identify and drill down on specific faults as well as easily share information across your organization. Through packet capture and reports, you can quickly reproduce faults and export a regression test suite for other ATS users to utilize. These reports can be exported into csv, xml, and pdf files.

04 Fast, efficient, and easy automated testing methodology

Achilles Test Software automates the test and result collection process, making it easy to test repeatedly through the development process.



Automated testing

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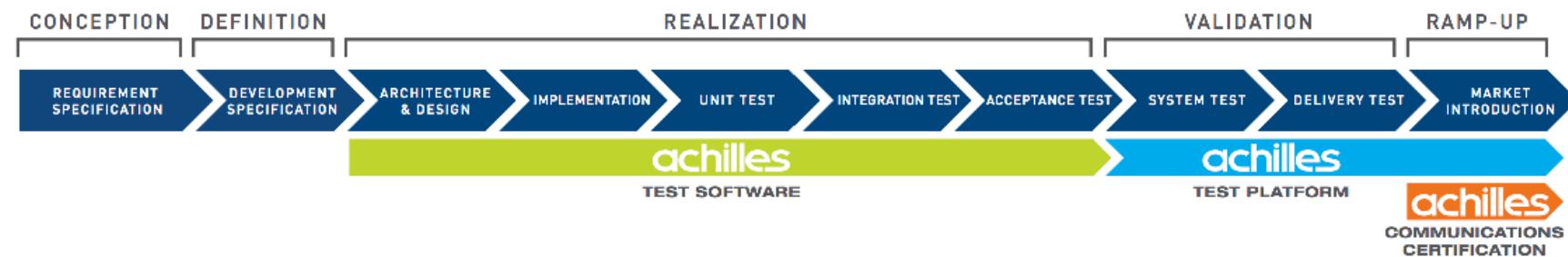
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Use cases

- Early lifecycle testing
 - Provide software developers with the ATS to allow for testing prior to QA
 - Reduce the cost of mitigation and allow for faster, more efficient implementation of robust devices
- Reproduce and isolate vulnerabilities across development teams
 - QA finds bug through ATP testing
 - QA exports tests from ATP and provides to developer
 - Developer imports tests into ATS and runs the same tests

Development process cycle



Achilles Test Software is utilized in the realization stage of the product development cycle. It can be utilized by numerous groups—such as engineering groups—for development and design.

Utilization of ATS during development will significantly reduce the time-to-market and costs associated with bug fixes by performing robustness testing earlier in the lifecycle.

When to use the Achilles Test Platform

Achilles Test Software provides a more cost-effective test tool for developers who do not have the same requirements as the QA team. Achilles Test Software does not support monitoring of the analog or discrete outputs, so if the specific test cases being analyzed by the developers require this type of output monitoring, Achilles Test Platform should be leveraged instead.

Technical specs

Achilles Grammars

Achilles Grammars send invalid, malformed, or unexpected packets to the Device Under Test (DUT) to test for vulnerabilities in specific layers of the protocol stack.

Achilles Storms

Achilles Storms generate packets at a high rate in order to examine the DUT's ability to handle high traffic rates for different protocols. The Achilles Test Platform also includes the ability to search for the denial-of-service threshold for a given type of storm traffic—the storm rate at which the device is no longer able to respond to other normal requests.

Known vulnerabilities

The Achilles known vulnerability test cases generate exploit traffic for vulnerabilities more likely to be found in OT devices.

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Hardware requirements

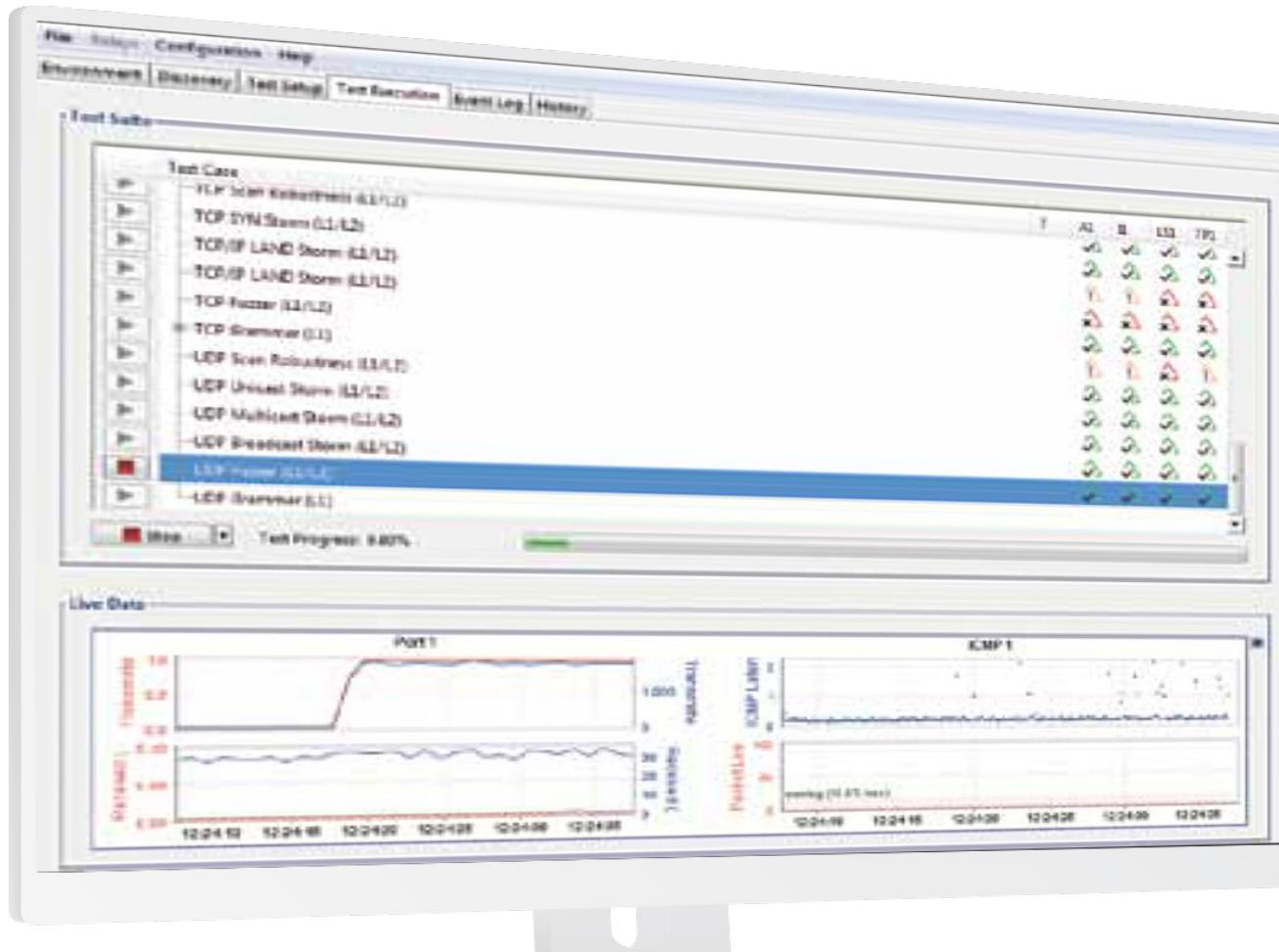
- CPU
 - Dual core 1.8GHz processor (quad core 2.4–3 GHz CPU recommended)
 - 64-bit CPU required for VMWare Workstation 8.0
 - CPU speed will affect network storm packet rates
 - Achilles Test Software has been successfully tested on Windows XP 32-bit, Windows 7 32- and 64-bit
- RAM
 - 2 GB (4 GB recommended)
- Network interface
 - Network interface for Achilles Test Software Port 1 (must be wired to connect to the DUT)
- Disk space
 - New VM disk requires approx. 4 GB
 - VM disk can grow up to 250 GB

Hardware requirements are representative and may vary by customer deployment.
Please consult the product documentation for more details.

Supported protocol test suites

Control Protocols

- DNP3 Test Suite
- EtherNet/IP-CIP Test Suite
- Foundation Field Bus Test Suite
- IEC 104 Test Suite
- IEC 61850 and MMS Test Suite
- Modbus TCP/IP Test Suite
- Modbus TCP/IP Client Test Suite
- OPC UA Test Suite
- PROFINET Test Suite
- IT Protocols
- FTP Test Suite
- SNMP Test Suite
- HTTP Test Suite
- NTP Test Suite
- Telnet Test Suite



GE Digital helps you harden your security posture and prepare to succeed in the new digital industrial landscape.

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Services

In the world of Industrial Internet of Things (IIoT), organizations are able to optimize productivity, reduce costs, and achieve Operational Excellence. While this is an exciting time for opportunity and growth, it can also bring on new challenges, questions, and uncertainty. No matter where you are on your IIoT journey, GE Digital has the right services offering for you.

[Advisory Services](#) We can help you plan and start your IIoT journey in a way that aligns to your specific business outcomes.

[Managed Services](#) We can help you maintain your critical machines from one of our remote locations around the world using model-based predictive-analytic technology.

[Implementation Services](#) Our team will help develop a collaborative, multi-generational plan that will marry your existing investments to the right process enhancements and technology.

[Education Services](#) We specialize in education services to ensure that you're leveraging our solutions to the fullest extent with our training and certificate programs.

[GlobalCare Support Services](#) Let us help by ensuring that your business continues to operate at its highest efficiency, all while mitigating risks to your investments.

[Cyber Security Services](#) Our solutions provide industrial-grade security for a wide range of OT network and application topologies.

Related products

GE Digital's OT cyber security suite helps protect industrial and healthcare companies against misconfigured devices and unplanned downtime due to cyber incidents. We can help you test, certify, and secure industrial connected devices, applications, and processes.



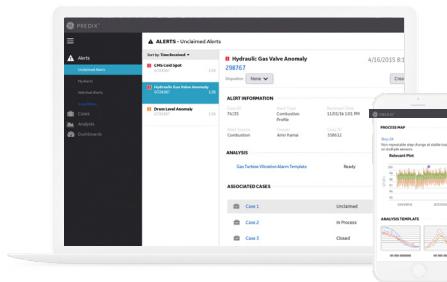
PREDIX

[OpShield](#) →

Designed to help protect critical infrastructure and controls network by defending the processes, communications, and assets that underpin your control strategy.

[Predix](#) →

Innovate and transform your business with the cloud-based operating system for the Industrial Internet, purpose-built for industry.



Continue your IIoT journey

Transforming your business requires innovative foundational solutions that lay the groundwork for optimized performance.

[Historian](#) →

Optimize asset and plant performance through time-series industrial data collection and aggregation, leveraging Predix IIoT connectivity.

[iFIX](#) →

Gain visibility into your operations and secure agility for smarter decision making that drives results.

[Asset Performance Management](#) →

Move from reactive to proactive maintenance to reduce unplanned downtime, minimize maintenance costs, improve efficiency and extend asset life.

About GE

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.

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