

Optimize Automated Test Systems With Better Systems and Data Management

An NI Industrial IoT Lab Demonstration



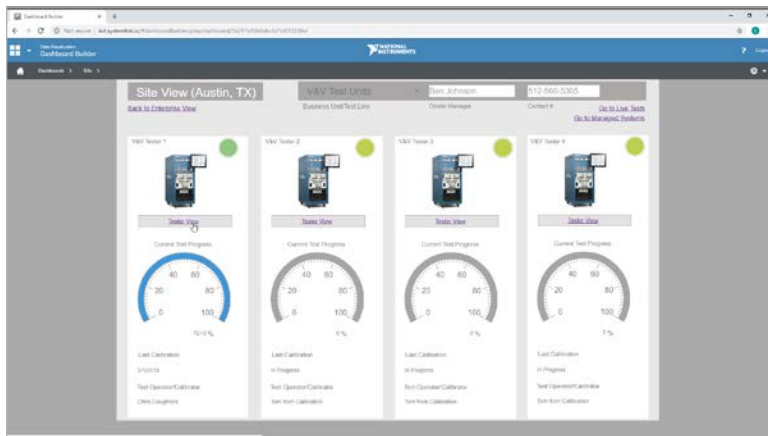
Better processes for managing automated test operations result in critical time and cost savings for organizations with distributed test system deployments. In its Industrial Internet of Things (IIoT) lab, NI showcases live how companies can connect, manage, and optimize multiple distributed automated test and automated measurement systems using a globally accessible web application running on a centralized server.

Demo Features

Name	IP Address	Model Name	Serial Number	Connection	Comments
478-718 Battery Test Station (3)					
4827 APB Launch/APE	10.108.0.4	4880-4827	010482	Connected	
4827 APB Launch/CPM	10.108.0.5	4880-4827	010483	Connected	
4827 APB T18	10.108.0.1	W-Pro-4827-000104	0110384	Connected	
478-718 Battery Test Station (3)					
4827 APB T18-1	10.108.0.108	W-Pro-4827-000104	0110381	Disconnected	
Cloud-4827 (3)					
4827-1	10.108.1.10	W-4827-0028 (Serial)	0180029	Disconnected	
4827-2	10.108.1.11	W-4827-0028 (Serial)	0180030	Disconnected	
4827-3	10.108.1.12	W-4827-0028 (Serial)	0122668	Disconnected	
4827-4	10.108.1.14	W-4827-0028 (Serial)	0180038	Disconnected	
4827-5	10.108.0.108	W-4827-0028 (Serial)	0180039	Connected	Located in Austin Testbed used in Active Testing
4827-6	10.108.0.109	W-4827-0028 (Serial)	0180040	Connected	Located in T18 Launch Pad in Austin LAB
4827-7	10.108.0.110	W-4827-0028 (Serial)	0122669	Connected	Located in T18 Launch Pad in Austin LAB
4827-8	10.108.0.111	W-4827-0028 (Serial)	0122670	Connected	Located in T18 Launch Pad in Austin LAB
4827-9	10.108.0.112	W-4827-0028 (Serial)	0122671	Connected	Located in T18 Launch Pad in Austin LAB
4827-10	10.108.0.113	W-4827-0028 (Serial)	0122672	Connected	Located in T18 Launch Pad in Austin LAB
4827-11	10.108.0.114	W-4827-0028 (Serial)	0122673	Connected	Located in T18 Launch Pad in Austin LAB
4827-12	10.108.0.115	W-4827-0028 (Serial)	0122674	Connected	Located in T18 Launch Pad in Austin LAB
4827-13	10.108.0.116	W-4827-0028 (Serial)	0122675	Connected	Located in T18 Launch Pad in Austin LAB
4827-14	10.108.0.117	W-4827-0028 (Serial)	0122676	Connected	Located in T18 Launch Pad in Austin LAB
4827-15	10.108.0.118	W-4827-0028 (Serial)	0122677	Connected	Located in T18 Launch Pad in Austin LAB
4827-16	10.108.0.119	W-4827-0028 (Serial)	0122678	Connected	Located in T18 Launch Pad in Austin LAB
4827-17	10.108.0.120	W-4827-0028 (Serial)	0122679	Connected	Located in T18 Launch Pad in Austin LAB
4827-18	10.108.0.121	W-4827-0028 (Serial)	0122680	Connected	Located in T18 Launch Pad in Austin LAB
4827-19	10.108.0.122	W-4827-0028 (Serial)	0122681	Connected	Located in T18 Launch Pad in Austin LAB
4827-20	10.108.0.123	W-4827-0028 (Serial)	0122682	Connected	Located in T18 Launch Pad in Austin LAB
4827-21	10.108.0.124	W-4827-0028 (Serial)	0122683	Connected	Located in T18 Launch Pad in Austin LAB
4827-22	10.108.0.125	W-4827-0028 (Serial)	0122684	Connected	Located in T18 Launch Pad in Austin LAB
4827-23	10.108.0.126	W-4827-0028 (Serial)	0122685	Connected	Located in T18 Launch Pad in Austin LAB
4827-24	10.108.0.127	W-4827-0028 (Serial)	0122686	Connected	Located in T18 Launch Pad in Austin LAB
4827-25	10.108.0.128	W-4827-0028 (Serial)	0122687	Connected	Located in T18 Launch Pad in Austin LAB
4827-26	10.108.0.129	W-4827-0028 (Serial)	0122688	Connected	Located in T18 Launch Pad in Austin LAB
4827-27	10.108.0.130	W-4827-0028 (Serial)	0122689	Connected	Located in T18 Launch Pad in Austin LAB
4827-28	10.108.0.131	W-4827-0028 (Serial)	0122690	Connected	Located in T18 Launch Pad in Austin LAB
4827-29	10.108.0.132	W-4827-0028 (Serial)	0122691	Connected	Located in T18 Launch Pad in Austin LAB
4827-30	10.108.0.133	W-4827-0028 (Serial)	0122692	Connected	Located in T18 Launch Pad in Austin LAB
4827-31	10.108.0.134	W-4827-0028 (Serial)	0122693	Connected	Located in T18 Launch Pad in Austin LAB
4827-32	10.108.0.135	W-4827-0028 (Serial)	0122694	Connected	Located in T18 Launch Pad in Austin LAB
4827-33	10.108.0.136	W-4827-0028 (Serial)	0122695	Connected	Located in T18 Launch Pad in Austin LAB
4827-34	10.108.0.137	W-4827-0028 (Serial)	0122696	Connected	Located in T18 Launch Pad in Austin LAB
4827-35	10.108.0.138	W-4827-0028 (Serial)	0122697	Connected	Located in T18 Launch Pad in Austin LAB
4827-36	10.108.0.139	W-4827-0028 (Serial)	0122698	Connected	Located in T18 Launch Pad in Austin LAB
4827-37	10.108.0.140	W-4827-0028 (Serial)	0122699	Connected	Located in T18 Launch Pad in Austin LAB
4827-38	10.108.0.141	W-4827-0028 (Serial)	0122700	Connected	Located in T18 Launch Pad in Austin LAB
4827-39	10.108.0.142	W-4827-0028 (Serial)	0122701	Connected	Located in T18 Launch Pad in Austin LAB
4827-40	10.108.0.143	W-4827-0028 (Serial)	0122702	Connected	Located in T18 Launch Pad in Austin LAB
4827-41	10.108.0.144	W-4827-0028 (Serial)	0122703	Connected	Located in T18 Launch Pad in Austin LAB
4827-42	10.108.0.145	W-4827-0028 (Serial)	0122704	Connected	Located in T18 Launch Pad in Austin LAB
4827-43	10.108.0.146	W-4827-0028 (Serial)	0122705	Connected	Located in T18 Launch Pad in Austin LAB
4827-44	10.108.0.147	W-4827-0028 (Serial)	0122706	Connected	Located in T18 Launch Pad in Austin LAB
4827-45	10.108.0.148	W-4827-0028 (Serial)	0122707	Connected	Located in T18 Launch Pad in Austin LAB
4827-46	10.108.0.149	W-4827-0028 (Serial)	0122708	Connected	Located in T18 Launch Pad in Austin LAB
4827-47	10.108.0.150	W-4827-0028 (Serial)	0122709	Connected	Located in T18 Launch Pad in Austin LAB
4827-48	10.108.0.151	W-4827-0028 (Serial)	0122710	Connected	Located in T18 Launch Pad in Austin LAB
4827-49	10.108.0.152	W-4827-0028 (Serial)	0122711	Connected	Located in T18 Launch Pad in Austin LAB
4827-50	10.108.0.153	W-4827-0028 (Serial)	0122712	Connected	Located in T18 Launch Pad in Austin LAB
4827-51	10.108.0.154	W-4827-0028 (Serial)	0122713	Connected	Located in T18 Launch Pad in Austin LAB
4827-52	10.108.0.155	W-4827-0028 (Serial)	0122714	Connected	Located in T18 Launch Pad in Austin LAB
4827-53	10.108.0.156	W-4827-0028 (Serial)	0122715	Connected	Located in T18 Launch Pad in Austin LAB
4827-54	10.108.0.157	W-4827-0028 (Serial)	0122716	Connected	Located in T18 Launch Pad in Austin LAB
4827-55	10.108.0.158	W-4827-0028 (Serial)	0122717	Connected	Located in T18 Launch Pad in Austin LAB
4827-56	10.108.0.159	W-4827-0028 (Serial)	0122718	Connected	Located in T18 Launch Pad in Austin LAB
4827-57	10.108.0.160	W-4827-0028 (Serial)	0122719	Connected	Located in T18 Launch Pad in Austin LAB
4827-58	10.108.0.161	W-4827-0028 (Serial)	0122720	Connected	Located in T18 Launch Pad in Austin LAB
4827-59	10.108.0.162	W-4827-0028 (Serial)	0122721	Connected	Located in T18 Launch Pad in Austin LAB
4827-60	10.108.0.163	W-4827-0028 (Serial)	0122722	Connected	Located in T18 Launch Pad in Austin LAB
4827-61	10.108.0.164	W-4827-0028 (Serial)	0122723	Connected	Located in T18 Launch Pad in Austin LAB
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4827-63	10.108.0.166	W-4827-0028 (Serial)	0122725	Connected	Located in T18 Launch Pad in Austin LAB
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4827-66	10.108.0.169	W-4827-0028 (Serial)	0122728	Connected	Located in T18 Launch Pad in Austin LAB
4827-67	10.108.0.170	W-4827-0028 (Serial)	0122729	Connected	Located in T18 Launch Pad in Austin LAB
4827-68	10.108.0.171	W-4827-0028 (Serial)	0122730	Connected	Located in T18 Launch Pad in Austin LAB
4827-69	10.108.0.172	W-4827-0028 (Serial)	0122731	Connected	Located in T18 Launch Pad in Austin LAB
4827-70	10.108.0.173	W-4827-0028 (Serial)	0122732	Connected	Located in T18 Launch Pad in Austin LAB
4827-71	10.108.0.174	W-4827-0028 (Serial)	0122733	Connected	Located in T18 Launch Pad in Austin LAB
4827-72	10.108.0.175	W-4827-0028 (Serial)	0122734	Connected	Located in T18 Launch Pad in Austin LAB
4827-73	10.108.0.176	W-4827-0028 (Serial)	0122735	Connected	Located in T18 Launch Pad in Austin LAB
4827-74	10.108.0.177	W-4827-0028 (Serial)	0122736	Connected	Located in T18 Launch Pad in Austin LAB
4827-75	10.108.0.178	W-4827-0028 (Serial)	0122737	Connected	Located in T18 Launch Pad in Austin LAB
4827-76	10.108.0.179	W-4827-0028 (Serial)	0122738	Connected	Located in T18 Launch Pad in Austin LAB
4827-77	10.108.0.180	W-4827-0028 (Serial)	0122739	Connected	Located in T18 Launch Pad in Austin LAB
4827-78	10.108.0.181	W-4827-0028 (Serial)	0122740	Connected	Located in T18 Launch Pad in Austin LAB
4827-79	10.108.0.182	W-4827-0028 (Serial)	0122741	Connected	Located in T18 Launch Pad in Austin LAB
4827-80	10.108.0.183	W-4827-0028 (Serial)	0122742	Connected	Located in T18 Launch Pad in Austin LAB
4827-81	10.108.0.184	W-4827-0028 (Serial)	0122743	Connected	Located in T18 Launch Pad in Austin LAB
4827-82	10.108.0.185	W-4827-0028 (Serial)	0122744	Connected	Located in T18 Launch Pad in Austin LAB
4827-83	10.108.0.186	W-4827-0028 (Serial)	0122745	Connected	Located in T18 Launch Pad in Austin LAB
4827-84	10.108.0.187	W-4827-0028 (Serial)	0122746	Connected	Located in T18 Launch Pad in Austin LAB
4827-85	10.108.0.188	W-4827-0028 (Serial)	0122747	Connected	Located in T18 Launch Pad in Austin LAB
4827-86	10.108.0.189	W-4827-0028 (Serial)	0122748	Connected	Located in T18 Launch Pad in Austin LAB
4827-87	10.108.0.190	W-4827-0028 (Serial)	0122749	Connected	Located in T18 Launch Pad in Austin LAB
4827-88	10.108.0.191	W-4827-0028 (Serial)	0122750	Connected	Located in T18 Launch Pad in Austin LAB
4827-89	10.108.0.192	W-4827-0028 (Serial)	0122751	Connected	Located in T18 Launch Pad in Austin LAB
4827-90	10.108.0.193	W-4827-0028 (Serial)	0122752	Connected	Located in T18 Launch Pad in Austin LAB
4827-91	10.108.0.194	W-4827-0028 (Serial)	0122753	Connected	Located in T18 Launch Pad in Austin LAB
4827-92	10.108.0.195	W-4827-0028 (Serial)	0122754	Connected	Located in T18 Launch Pad in Austin LAB
4827-93	10.108.0.196	W-4827-0028 (Serial)	0122755	Connected	Located in T18 Launch Pad in Austin LAB
4827-94	10.108.0.197	W-4827-0028 (Serial)	0122756	Connected	Located in T18 Launch Pad in Austin LAB
4827-95	10.108.0.198	W-4827-0028 (Serial)	0122757	Connected	Located in T18 Launch Pad in Austin LAB
4827-96	10.108.0.199	W-4827-0028 (Serial)	0122758	Connected	Located in T18 Launch Pad in Austin LAB
4827-97	10.108.0.200	W-4827-0028 (Serial)	0122759	Connected	Located in T18 Launch Pad in Austin LAB
4827-98	10.108.0.201	W-4827-0028 (Serial)	0122760	Connected	Located in T18 Launch Pad in Austin LAB
4827-99	10.108.0.202	W-4827-0028 (Serial)	0122761	Connected	Located in T18 Launch Pad in Austin LAB
4827-100	10.108.0.203	W-4827-0028 (Serial)	0122762	Connected	Located in T18 Launch Pad in Austin LAB

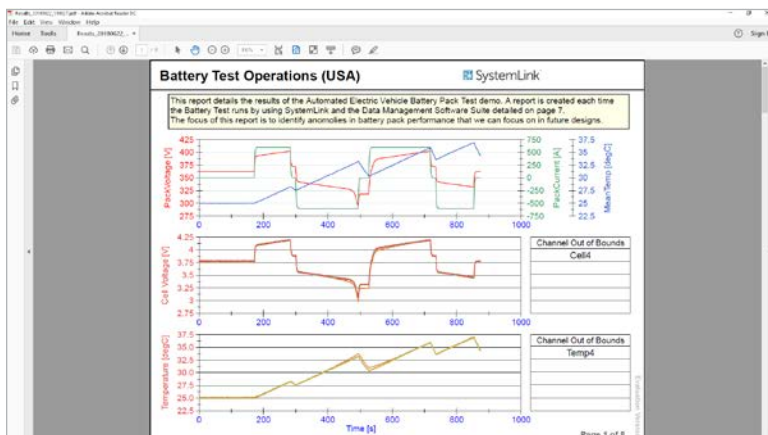
Systems Management

Manage distributed automated test and automated measurement systems running the Windows or Linux Real-Time OS with remote software deployment, device management, and health and performance diagnostic capabilities. Configure alarms to notify users of potential system health issues or events.



Site Wide Dashboard

Access dashboards created with the drag-and-drop dashboard creator from any web browser. They show a consolidated view of live information from test systems such as system diagnostics and test results, including step and sequence status.



Automated Analysis and PDF Reports

Generate reports for engineering teams and managers from measurement data that is produced by the connected systems and automatically consolidated to a central location and analyzed. You can search for and download that data from the web for local analysis to help drive business decisions.

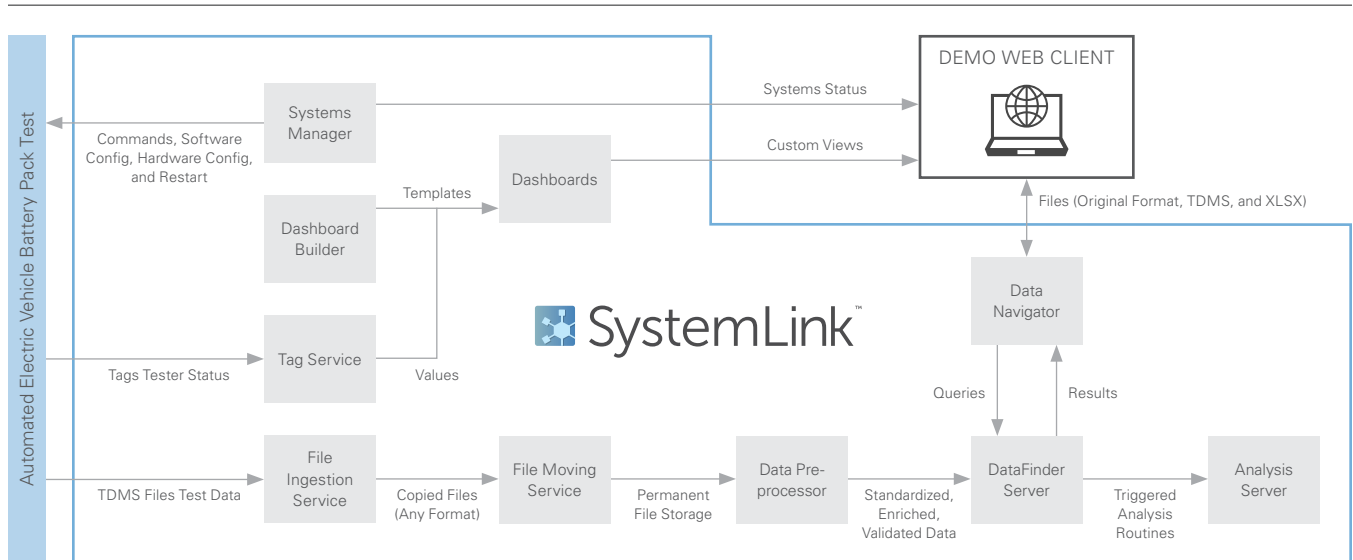
Theory of Operation

You can access the SystemLink™ application through any web browser. The web application is hosted by a central SystemLink server. A small agent program called the SystemLink Client is installed on each connected test system to help you communicate with the SystemLink Server. You manage each connected system using the SystemLink System Manager for software deployment and device configuration.

LabVIEW programs running on each test system are configured to send additional data using tags to the SystemLink Server every second. These tags contain system-specific information like results from the current test. Each dashboard displays a distinct view customized for different stakeholders that starts with a global site view, then a view of all test systems at a single site, and finally a view of specific test systems within a site.

Using the SystemLink File Ingestion service, you can periodically copy Technical Data Management Streaming (TDMS) files from the test systems to the SystemLink Server. Scheduled analysis routines run every hour to automatically analyze and produce reports from the raw data collected on the test systems. You can then view these reports and raw data from the web using the DataFinder Server web application.

Smart Connected System Diagram



Industry Impact

Like this demonstration shows, you can improve engineering team productivity, lower the cost of system maintenance, and increase system uptime with better systems and data management for automated test systems using centralized server software. Applicable industries include aerospace and defense, transportation, general manufacturing, and any industry that uses automated test and automated measurement systems.

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