

DIAGNOSTICS AND REPORTING



Overview

The Jacques IP Communication System (650 Series) features advanced diagnostic and health checking capabilities which are logged and reported, in real-time, 24/7. The system continuously reports on over 320 events including configuration, call activity, device & system health status and faults. The system controller sends a heartbeat to endpoints every 5 seconds and reports on the result. This ensures that issues within a system are recognised instantaneously.

Diagnostics are classified into the following areas

Configuration

Issues with system configuration are logged and reported and include setting errors, database failure and password faults.

System

System issues logged and reported include essential device failures, device count errors, unidentified or unknown endpoint connection, event log purge and controller time failure.

Device

Detailed device level diagnostics report on the following issues; endpoint fail and reset, endpoint firmware version issue, self-test result, online/offline status, tamper, hardware issue, button stuck alarm, microphone test alarm, malfunction alarm, equipment failure, threshold alarm monitor change, button self-test result, automated test of speaker & microphone result and microphone fail.

Together these test results ensure the ongoing, functioning health of the entire system and ensure the reliability of communication-critical systems.

Logging & Reporting

The Intercom Report Server (IRS) software module is instrumental in the detailed and accurate logging and reporting of live system activities including system operation, network management via traffic monitoring, alarms and device state. The IRS is accessed via a web interface and provides a dynamic view of live events to monitor the system in real time while automatic or scheduled report generation and document creation ensure simplified information dissemination.

Report detail can be configured by four defined filters depending on reporting requirements.

Default

Creates reports containing tag, status (online or offline), resets, number of answered/held/connected calls, failed calls, total ringing/calling/connected time and elapsed triggered alarm duration.

Call Activity

Creates reports containing tag, call timestamp, intercom descriptors, and call handling information.

Faults

Creates reports containing tag, fault timestamp, and fault description.

System Diagnostic Functionality (SDF)

Creates reports containing tag, acoustic test, status test, and button test information.

Self test button

Intercom devices featuring Jacques Self Test Button add another layer of testing and reporting to device level diagnostics and reporting.

The Jacques Self Test Button (STB) is a reliable, mechanical intercom call button that allows for the testing of the push button mechanism, acoustics and data communications remotely. The testable button switch contains a built-in actuator which triggers a button press remotely and thus tests the operation of the button. A complex algorithm analyses the results of the test parameters and reports on the overall status of the test for each device. A site-wide diagnostic test can be triggered manually or scheduled to occur at any time or interval with a report generated at the completion of the test. This provides confidence to facilities management on the reliability of the intercom call functionality and allows any maintenance issues to be rectified in a timely manner. A site with over one thousand intercoms fitted with STB’s can be tested in under one minute.

Jacques Self Test Buttons are manufactured and tested to ensure ultimate reliability. Upon manufacturing completion every STB is subjected to overnight burn-in testing. Burn-in tests trigger the button’s self-test function every 10 seconds resulting in no less than 4000 button presses being detected over the testing period. Should a STB indicate any sign of failure it undergoes an investigation and rectification process before being subject to additional testing. Furthermore, in each batch, a random sample is subjected to extended testing. Units undergoing additional testing are subjected to boundary environmental conditions in an environmental test chamber in which automation ensures button testing to more than 1 million presses. These rigorous testing processes ensure that a failed unit will never return a ‘PASS’ result.

Performing site-wide self test

Site-wide device testing can be performed manually or automatically. The System Diagnostic Functionality (SDF) report can be scheduled to perform a system-wide functionality test at any time; hourly, daily, weekly via the Intercom Report Server (IRS) software module. The SDF report can be manually actioned from the Intercom Report Server interface at any time. The resulting pdf report is available to view or download from the report archives. Reports can also be automatically emailed to recipients.

If configured, the System Diagnostic Functionality test can be performed from the Jacques PC Master Station with J650UI (GUI). The results can be viewed in the Intercom Report Server live events table.

The SDF report details the results of all intercom devices tested and includes individual test results and an overall pass or fail result. If an individual test fails, the overall result will equal a fail.

System diagnostic functionality tests

Acoustic Test | Automatic Test of Speaker & Microphone (ATSM)

The ATSM test process involves a 4 kHz impulse (~5ms) being played from an intercom loudspeaker that is measured by the intercom’s microphone and audited for volume level. Persons located near the intercom can expect to hear a short beep. The test identifies if an intercom has a faulty or damaged microphone or speaker. To successfully pass the test a suitably functioning speaker and microphone is required. If a faulty or damaged microphone or speaker is present the test, under no circumstance, will return a ‘PASS’ result. For example, if there is very loud environmental noise present at the time of the test, an endpoint can return a ‘FAIL’ result as the test verifies the microphone detected volume before, during and after the impulse to prevent against false ‘PASS’ results due to other noise sources. In such instances the intercom can be tested manually to verify the test result.

Button Test | Button function

During the Self Test the built-in actuator physically triggers the button press event whereby the button is pushed in as if being pressed by a user and then released. In cases whereby, a button press is detected but a button release is not; a ‘BUTTON STUCK’ result will be returned. In the case where no button press is detected a ‘FAIL’ message will result.

Status Test | Online or Offline

The Status Test reports whether the intercom device is online or offline at the time of the test. Devices online will show a ‘PASS’ result, while an offline device will show a ‘FAIL’ result. Offline devices should be investigated further.

The results from intercom self-acoustic testing of the speaker and microphone is recorded and alerts maintenance that there is an audio issue impacting on the audio quality of the call to and/or from the intercom device. The failed result of a button test alerts there is an issue with the intercom call button, this allows for a timely response of the maintenance team.



STB history

The ongoing issue of detainee safety highlighted the need for detention and correctional facility operators to ensure the reliability of all communications devices. To address this issue Jacques Technologies engineered, designed and manufactured the STB.

Prior to the invention of the Jacques STB the remote testing of communications devices was unachievable. Previously, testing of the intercom was conducted manually on a daily or weekly basis by a facility management technician walking to each intercom and pressing the call button. The drawback of this approach was it consumed a lot of the facilities operator’s time and was a costly and timely exercise prone to human error.

There are currently many sites utilising the functionality of the STB to better record, document and maintain their intercom devices. Thousands of STB’s are operational in many projects across a variety of industries ensuring optimal performance of intercom systems and facilities management teams.

The Jacques STB is a patented device.



ALARM & DIAGNOSTIC EVENT SUMMARY

CONFIGURATION

NAME	OPERATION
DEVICE_SETTING_ERROR	The device setting in the database, or set via properties, is not supported
ALARM_CONFIG	An application has reported a change in its configuration alarm status
DATABASE_FAILED	Informational
PASSWORD_FAULT	Informational




SYSTEM

NAME	OPERATION	SEVERITY	RESOLUTION
DEVICE_COUNT_WRONG	The server has reconciled the devices in the system that are online with the expected device counts in the site configuration database and found too few or too many of the specified device	If the specified device is not online it may not be functioning correctly. If the device is an intercom endpoint it will not be able to originate or answer calls	If the device(s) has failed it should be replaced or repaired. If the device(s) has been permanently added or removed from the system the site configuration database should be updated to lower the number of expected devices
DEVICE_FAIL	The actual devices that are online in the system have been reconciled with the expected device counts in the site configuration database and the server has found that a required device is missing. The device is marked in the site configuration database as device essential to the system.	If the specified device is not online it may not be functioning correctly. If the device is an intercom endpoint it will not be able to originate or answer calls.	If the device has failed it should be replaced or repaired. If the device has been permanently removed from the system the site configuration database should be updated to lower the number of expected devices
DEVICE_MISSING	The server has reconciled the devices in the system that are online with the expected device counts in the site configuration database and found that a non-essential device is missing	If the specified device is not online it may not be functioning correctly. If the device is an intercom endpoint it will not be able to originate answer calls	If the device has failed it should be replaced or repaired. If the device has been permanently removed from the system the site configuration database should be updated to lower the number of expected devices
ENDPOINT_CREATE_UNKNOWN	A device has come online which is not listed in the site configuration database	A valid device might be faulty which is causing it to report an incorrect ID and therefore it is not functioning correctly, or a illegal device has been connected to the system. If the device is an intercom endpoint it may not be able to originate or answer calls	If the device has been permanently added to the system it should be listed in the site configuration database. This event may indicate that a Location ID attachment maybe incorrect or not connected properly.

DEVICE

NAME	OPERATION	SEVERITY
ENDPOINT_FAIL	The endpoint has failed to respond to a heartbeat message or command from the server and is now considered offline	If the specified device is not online it may not be functioning correctly. If the device is an intercom endpoint it will not be able to originate or answer calls
ENDPOINT_RESET	<div>The server has received a reset message from the specified device</div> <div>Reason codes: 0 No reset reason was given 1 Installing, software/hardware reset on powerup 2 Invalid protocol state, JCCP function called in the wrong state 3 Invalid protocol state, called in the build event state 4 Invalid protocol state, called before sending a response 5 Timeout on a command from the server 6 Timeout on an ACK from the server 7 Reset message sent by the server</div>	During startup this is a normal event as each device connects to the server, If this occurs after startup the device may not be functioning correctly
ENDPOINT_RESET_UNKNOWN	The server has received a reset message from a device which is not listed in the site configuration database	<div>A valid device might be faulty which is causing it to report an incorrect ID and therefore it is not functioning correctly, or a illegal device has been connected to the system.</div> <div>If the device is an intercom endpoint it may not be able to originate or answer calls</div>
ENDPOINT_RESET_WRONG_VERSION	The current firmware version reported by the specified device does not match that specified for it in the site configuration database. The server will attempt to upgrade the firmware on the device	The device appears to have the incorrect software installed and may not be functioning correctly
ENDPOINT_SELFTEST_FAIL	The device has failed one of its internal self tests	The unit may not be functioning correctly
ALARM_TAMPER	A device has reported a change in its tamper alarm status	
ALARM_HARDWARE	A device has reported a change in its hardware alarm status	
ALARM_BUTTON_STUCK	A device has reported a change in its button stuck alarm status	
ALARM_MIC_TEST	A device has reported a change in its microphone test alarm status	
ALARM_MALFUNCTION	A device has reported a change in its malfunction alarm status	
ALARM_EQUIPMENT_FAILURE	A device has reported a change in its equipment failure alarm status	
ALARM_THRESHOLD_ALARM_MONITOR	A device has reported a change in its threshold alarm monitor status	
ALARM_BUTTON_SELF_TEST	A device has reported a change in its button self test status	
UNKNOWN_ENDPOINT_FAIL	The endpoint has failed to respond to a heartbeat message or command from the server and is now considered offline	
ATSM_FAILED_STATS	The server has reported why a tags ATSM test failed	
BUTTON_SELF_TEST_RESULT	The server has reported the results of a button self test	
DEVICE_OFFLINE	The endpoint has failed to respond to a heartbeat message or command from the server and is now considered offline	If the specified device is not online it may not be functioning correctly. If the device is an intercom endpoint it will not be able to originate or answer calls.
DEVICE_TAMPER	The tamper alarm has been triggered on the specified device	Device may have been tampered with
DEVICE_MIC_FAIL	The specified device failed its MIC test	Audio from the speaker or microphone on the device may be malfunctioning.
DEVICE_BUTTON_STUCK	The specified device has detected button stuck	



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