



ATIS-0300108

ATIS Standard on -

**BEST PRACTICES FOR AUTO DIALER CALL VOLUME TESTING PROCEDURE:
TDM AND VOIP**



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ATIS-0300108, *Best Practices for Auto Dialer Call Volume Testing Procedure: TDM and VoIP*

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Best Practices for Auto Dialer Call Volume Testing Procedure: TDM and VoIP

Alliance for Telecommunications Industry Solutions

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Foreword

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Next Generation Interconnection Interoperability Forum (NGIIF) addresses next-generation network interconnection and interoperability issues associated with emerging technologies. Specifically, it develops operational procedures which involve the network aspects of architecture, disaster preparedness, installation, maintenance, management, reliability, routing, security, and testing between network operators. In addition, the NGIIF addresses issues which impact the interconnection of existing and next generation networks and facilitate the transition to emerging technologies.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, Next Generation Interconnection Interoperability Forum (NGIIF), 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time of consensus on this document, Next Generation Interconnection Interoperability Forum (NGIIF), which was responsible for its development, had the following leadership:

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Best Practices for Auto Dialer Call Volume Testing Procedure: TDM and VoIP

1 Scope

1.1 Scope

The purpose of these guidelines is for an Auto Dialer user or initiator providing a type of notification service, with the exception of Emergency Notification Systems, to test with their local service provider(s). The test scenario is primarily for TDM and VoIP generated lines. While some wireless numbers may already be included within the database of numbers used by an auto dialer user or initiator, testing of wireless numbers is not within the scope of this document for the following reason: wireless customers are not limited to a static area and may not be within the range area at the time of testing.

The types of services that this practice covers includes but is not limited to: telemarketing, political calls, school or non emergency notifications.

The emergency notification testing procedures are located in ATIS-0300098, Best Practices for Emergency Notification System (ENS) Call Volume Testing Procedure: Wireline.

2 References

The following documents/standards contain information which is referenced within this guideline. At the time of publication, the editions indicated were valid. All documents/standards are subject to revision, and the reader is encouraged to investigate the possibility of applying the most recent editions of the standards and/or documents indicated below.

ATIS-0300098, *Best Practices for Emergency Notification System (ENS) Call Volume Testing Procedure: Wireline*¹

3 Definitions

3.1 Definitions

Auto Dialer Terminology: Could also be known as predictive dialer, robocalling (ATIS-0300102, *Auto Dialers Reference Document: Auto Dialer Basics*²).

Auto Dialer User/Initiator: Campus, municipality, or any other customer with Auto Dialer equipment, or any user/initiator who relies on off-site vendor provided equipment to initiate notification calls.

Auto Dialer Vendor: One who provides the Auto Dialer equipment and/or Auto Dialer service.

Call Completion Optimization: The maximum number of calls completed in the shortest amount of time with the least amount of blockage.

¹ This document is available via the Alliance for Telecommunications Industry Solutions, 1200 G Street, NW Ste. 500 Washington, D.C. < <https://www.atis.org/docstore/product.aspx?id=24612>>

² This document is available via the Alliance for Telecommunications Industry Solutions, 1200 G Street, NW Ste. 500 Washington, D.C. < <https://www.atis.org/docstore/product.aspx?id=26137>>

Conference Bridge: Any mechanism that allows the multiple parties to effectively communicate in real time during the duration of the procedure.

Telecommunications Service Provider: Includes the interim or terminating service provider.

4 Auto Dialer Test Plan Development

Best practices for call volume testing have been developed to increase awareness for optimization of call completion, opening a dialogue between Service Providers and Auto Dialer users or initiators. It is the intent of the NGIIF to promote the use of these best practices to standardize the process to be used for all Auto Dialer notification initiators with all of their service providers to facilitate their initial deployment and ongoing periodic testing.

Once contact has been made for testing between parties then a test plan should be developed for use in both the initial and any subsequent periodic testing. A test plan should be developed and based on the needs and circumstances present in the target area. The test plan may be modified on an ongoing basis as determined between the testing parties.

Databases used for auto dialers may include wireless numbers provided by wireless users and subscribers. For example wireless subscribers are frequently present in college, university or school situations and this should be identified in any test plan development. While it is recognized that wireless terminations are likely, wireless testing is not endorsed or supported. As stated earlier in this document, wireless customers are not limited to a static area and may not be within the range area at the time of testing.

As the test plan is developed the parties need to identify the types of call scenarios which should be tested. This could vary depending on the application or intended use of the auto dialer system audience. The test plan developers should be aware of the technologies and networks available within the scope of testing. Tests should be developed to cover as many known scenarios as possible. Below are some example scenarios which should be considered when developing the test plan. This list is not all inclusive and testing should be based on situations within the target test area.

1. An auto dialer IP origination and TDM or IP termination within the same central office.
2. An auto dialer TDM origination and TDM or IP termination within the same central office.
3. An auto dialer IP centralized origination which may transit through tandems in multiple networks and terminate in a central office location.
4. An auto dialer TDM centralized origination which may transit through tandems in multiple networks and terminate in a central office location.
5. Computer originated and central office terminated.
6. IP originated and terminated in multiple central office switches
7. TDM originated and terminated in multiple central office switches
8. IP originated and terminated in central office host and remote(s)
9. TDM originated and terminated in central office host and remote(s).

4.1 Factors to be Considered Relative to Testing:

It is important to understand that the result from each test performed may vary due to the following:

4.1.1 Area Infrastructure

The telecommunications infrastructure may vary by area, even within a given community. Therefore, it is necessary to compare results over time based upon the same collection of targeted phone numbers. One given community may not have the same call algorithms as the given community next door.

4.1.2 Host/Remote(s) Relationships

Remote switches are utilized to accommodate small exchanges where most of the calling patterns are local to the remote. There are several aspects particular to remote switches that make them more vulnerable than the host switch.

- Auto dialers compete with all calls over the host-remote umbilical and vie for the same switch and signaling resources
- The size of the umbilical and its capacity for call handling/signaling can be easily overloaded and isolate the remote from the PSTN
- If the remote becomes isolated it is in a “stand-alone” mode of operation, which only allows calls between end users of the remote
- Depending on the switch vendor technology, this can be only certain frames of equipment within the remote and not the full remote

If the remote becomes isolated E911 service is lost. Sometimes a contingency plan accounts for a call forwarding of 911 calls to a telephone number within the remote that can handle local emergencies. This may or may not be provided for in each and every scenario and is subject to the requirements of the PSAP customer and availability.

4.1.3 Dynamic Traffic

Traffic volumes vary by average business day, nights, weekends, holidays, events, time of day, etc. Auto Dialer Users, Auto Dialer Vendors, and Telecommunications Service Providers should work together to identify an appropriate time of day for tests to be performed to best replicate the highest volume of residual traffic likely to be encountered during a communication event. The call volume algorithms then should be set to the highest level acceptable to all parties involved.

4.1.4 Telecommunications Service Provider volume capacity

It should be fundamentally understood by all parties that total network capacity of telephone calls is finite between toll tandem and end offices and between end offices to their remote offices. Capacity planning (trunk sizing) is developed over time to achieve a particular grade of service. This means that of all calls made during busy hour, only x calls fail out of 100. Grade of service requirements are sometimes determined by State Utility Commissions. The increase of total calls during a planned test or notification event typically overloads the network because fundamentally, the network is not designed to handle significant short-term dramatic increases in call volumes. If not carefully managed, mass call notification events initiated by an auto dialer user/initiator or vendor can and often cause serious overloads and significant network congestion.

Advanced notifications are desirable prior to placing a mass calling notification event. In many cases it is not practical due to the nature of some types of events, such as emergencies. However, it would be helpful if agreements and arrangements could be made between the local service provider and the mass calling operator to have the first call in the notification queue go to a number designated by the service provider. This alert to the local service provider at the initiation of the event may assist in giving the service provider advanced awareness of a mass calling event.

4.1.5 Other Testing Considerations

Testing should confirm what Calling Party Number is displayed.

Testing should include calls made to intercepted numbers, and then confirm that the auto dialer recognized called number as a non-working number and that there was an action to remove this TN from the Calling List.

Test to insure that the auto dialer disconnects the call when an intercept tone or fax number is identified.

There may be other factors present which have not been identified in this document and should be considered when developing a test plan.

5 TDM and VoIP Testing Process

The following are the basic steps that should be taken during the testing process:

1. The Telecommunications Service Provider's Account Manager, Representative, or Auto Dialer User/Vendor should initiate a meeting to discuss the call volume, duration, auto dialer equipment parameters, testing schedule, and communication arrangements. Information that may be needed prior to testing could include: message length, NPA-NXX targets and counts, basic call connect time averages, number of retries, and/or one or two way messaging. It is recommended that the terminating Telecommunication Service Provider(s) proactively review historical traffic patterns and percent fill of final and alternate trunking capacity to determine likelihood of success of the proposed test calls. Based on the investigation, some TSPs may make recommendations to the auto dialer user as to rate and durations of call attempts in order to successfully complete the highest percentage of calls.
2. On the date of the test establish a conference bridge with representatives from the Telecommunications Service Provider, that could include the carrier sending the calls, the Telecommunications Service Provider's terminating central office within the call route as appropriate, the Telecommunications Service Provider Account Management team, network management center; the vendor of the Auto Dialer system; and the Auto Dialer User/Vendor. It is recommended that the bridge be opened 15 to 30 minutes before scheduled start time of the test. The provider of the conference bridge for coordination should be mutually agreed upon by the testing parties.
3. Once the test has been initiated Telecommunications Service Provider monitors their call data systems to check for call completion or blockage. The central office technician or Network Operations Center surveillance personnel checks for an overload condition within the office. The Auto Dialer User/Vendor checks the call volume to the recipients to see if they are completing as well. All participants provide feedback to the conference bridge for the duration of the test.
4. If a critical incident affecting the network occurs (e.g. mass evacuation notification due to wildfire, earthquake, etc) it will be mutually agreed upon between the parties to suspend and/or reschedule the testing.
5. During the test Telecommunications Service Provider(s) captures snapshots of data screens to be used for future reference (normally reserved for use within Telecommunications Service Provider only). Based on the call volume presented during the test on the trunk group(s) going through the central office(s) that the Auto Dialer User/Vendor is targeting, Telecommunications Service Provider could make a recommendation on the optimal number of calls that can be sent in concurrent 1-minute periods without causing network blockage or the need for redialing the individual customers on the distribution list. If significant blockage occurs, the TSP could require the auto dialer user to reduce the total number of simultaneous calls or request a total stoppage of the test.
6. In the event that there are capacity changes in the Telecommunications Service Provider's network, or the Auto Dialer User/Vendor's capability changes, then it may be necessary for new testing to occur. It is therefore recommended that periodic (e.g. monthly or quarterly) testing be arranged.

6 Post Test Discussions Related to Lessons Learned and Evolution of Test Plan

Once the tests have concluded a post test meeting should be conducted to determine how the tests went, if any lessons were learned, if any anomalies were discovered, and if any changes should be made to the test plan. In this way the test plan will continue to evolve every time testing occurs. It is recommended that tests should be run periodically to ensure that changing conditions are identified and cared for.

There are three basic areas to look at in the post test discussion depending on the testing participants and how the system is managed. Test participants could include but may not be limited to: the auto dialer user and/or the auto dialer vendor, and the telecommunications provider. Some basic items for discussion have been listed below.

6.1 For Auto Dialer User

- Based upon actual delivery time achieved, in what ways should communications plans be modified relative to timing when Auto Dialer service is going to be used, or not used, in order to use the system effectively?
- Does each member of the communications management team have a strong understanding for what areas of the community can be reached quickly versus other areas which will require more time?
- Is any training or re-training necessary for various stakeholders in the community in order to properly set expectations relative to using a mass notification service?
- Remember to go through these questions after each test or real event. Remember that the network is dynamic and that the results will change based upon the environment encountered when each call is sent.
- As with any Auto Dialer testing procedure it is recommended that the team review the results and apply lessons learned to future tests and real-world notifications scenarios.

6.2 For Auto Dialer Vendors

- What information about the network configuration within the area can be saved and reused?
- What information about the carrier(s) and or the switch configuration can or cannot be applied to future messages sent on behalf of any and/or all customers?
- Is there a way to promote standardized testing procedures among the client base?
- What additional protocol can be established with the telecommunications service provider that can benefit other mutual clients?
- It is suggested that the appropriate call throttling algorithms for the respective area should be stored for automatic use in each subsequent call event.

6.3 For Telecommunications Service Providers

- If possible, establish an advance warning program for both future tests and, when possible, real-world scenarios. The intent of this process is to bring together the user, the telecommunications service provider, and the mass notification provider to identify simple scenarios where advanced notification of a mass notification event is given to the telecommunications service provider.
- Determine if the correct internal parties were involved with the advance testing process.
- Determine if there were any remote switching facilities that did or did not have direct access to trunks in the advance testing scenario. During the test was there any congestion between the remote and the host? If so, should this be evaluated for future system modifications and/or should further throttling be implemented and tested?
- Determine what statistical information can be shared between testing parties.
- Analyze congestion and make recommendations on where to throttle back traffic.
- Ask vendors/users to review the validity of phone numbers in database. Would the removal of numbers identified with fax machines and non-working numbers in the database better alleviate congestion?
- Ask vendors/users how often the database is scrubbed for non-working numbers? Would scrubbing the database improve the performance of future tests?

7 Summary

Auto Dialers Users, Auto Dialer Vendors, and Telecommunication Service Providers need to work together to perform periodic coordinated tests. These tests will be used to determine the appropriate call throttling algorithms for the respective area as well as to foster ongoing dialogue among all parties to ensure timely and efficient communications. The auto dialer procedures and systems will continue to evolve.