

EXHIBIT A

(Declaration of VoApps, Incorporated—David A. King)

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

KAREN SAUNDERS,

Plaintiff,

v.

DYCK O’NEAL, INC.

Defendant.

Case No. 1:17-cv-00335-GJQ-RSK

DECLARATION OF VOAPPS, INCORPORATED—DAVID A. KING

1. My name is David A. King. I am over eighteen years of age and have personal knowledge of the facts set forth in this Declaration.
2. In 1985, I graduated from Memphis State University, earning a bachelor’s degree in electronic engineering technology. Then, in 1997, I earned a master’s degree in business administration from Emory University.
3. I am the original founder of VoApps, Inc. (“VoApps”), but I left VoApps in 2015. I invented the adaptive signaling technology (“Adapt-Sig”) utilized by VoApps’ DirectDROP Voicemail (“DDVM”) technology.
4. I have been awarded two U.S. patents related to my Adapti-Sig technology, U.S. Patent numbers 8,976,676 and 9,325,596. I created the intellectual property underlying these patents while developing the DDVM technology.
5. Through education, training, and experience, I am familiar with the International Telecommunications Union (ITU), the internationally recognized standards body responsible for all telecommunications standards and protocols worldwide. Indeed,

understanding the relevant ITU standards was essential for me to be able to invent Adapt-Sig. I also am familiar with VoApps' DDVM technology and the U.S.

telecommunications network as it pertains to calls, voicemail, text messages, and certain voicemail applications that may be installed on a cellular device.

I. VOICEMAIL FUNDAMENTALS

6. A precursor to voicemail service was the answering machine. An answering machine is a device used for answering and recording a caller's message. Answering machines store the message content directly on the answering machine equipment and are physically connected to a residential or business landline.
7. All cellular voicemail, by contrast, relies upon the use of a centralized computer system that allows cell phone users to retrieve and exchange voice messages. Specifically, unlike answering machines, voicemail service platforms rely on voicemail equipment that is centrally located in data centers or housed in telephone carrier central offices. These voicemail service platforms consist of rack mounted, computerized servers that are connected to the telephone network and are assigned business class, landline telephone numbers.
8. One common thread across all voicemail services is the fact that voicemail messages are always delivered to this type of a separate server rather than being delivered to the telephone device or handset itself. Voicemail messages must be delivered to a voicemail platform, which stores the message content locally on the voicemail service provider's platform unless and until the voicemail user retrieves or deletes those messages. Furthermore, a consumer typically owns an answering machine, whereas voicemail is provided as a service, and the consumer has no ownership interest in the voicemail

service provider platform—rather the voicemail service is owned and operated by a third-party service provider. This third party often will be the consumer’s wireless carrier but does not have to be as there are a variety of companies who offer cellular voicemail services.

9. When a consumer leaves a cellular carrier’s storefront with a new cell phone account and cellular service, he or she can immediately make and receive calls and Short Message Service (SMS) text messages. This is because almost all United States cellular carriers offer SMS text messaging as an ‘Opt-Out’ service, meaning SMS is automatically enabled for a carrier’s users, unless the user specifically opts-out and requests that their SMS text service be removed from their account.
10. In contrast, when that same consumer leaves the store, the consumer cannot use cellular voicemail unless and until the consumer sets up and activates a voicemail account. This is because United States cellular carriers offer voicemail on an ‘Opt-In’ basis. Voicemail is provided as an optional service that the consumer may opt to use, or they may choose not to use it at all. In fact, as the Federal Communications Commission (FCC) recently observed, more and more people are opting not to use any type of voicemail service and instead, are opting to use SMS text messaging and direct messaging apps like Facebook Messenger, WhatsApp, and iMessage, among others.¹
11. There are two main ways by which consumers are able to use voicemail on their cellular devices. Today, almost all consumers who do elect to use voicemail decide to manage

¹ FCC’s Dec. 12, 2018 Declaratory Ruling on Regulatory Status of Wireless Messaging Service, at 19, n.127, available at <https://docs.fcc.gov/public/attachments/FCC-18-178A1.pdf> (“ . . . ***the record indicates that consumers do not view voicemail as an acceptable alternative to SMS/MMS messaging.*** Consumers, particularly younger users, use messaging instead of voice mail as a preferred data storage technology, and even if consumers used wireless messaging service as a substitute for voice mail, this would be a further indication that wireless messaging service is an information service because voice mail is an information service.”) (citation omitted).

their voicemail by using a voicemail application, often referred to as an “app.” Should a consumer choose to use a voicemail service app, he or she must do several things. First, the consumer must select and download a voicemail app. The consumer may choose to use a voicemail app preloaded by the consumer’s cellular carrier onto the consumer’s cellular device (e.g., Verizon’s voicemail app or Sprint’s voicemail app). Alternatively, the consumer can download any of a variety of third-party voicemail apps—indeed, I created such a voicemail service and app in 2016 called YouVOXX that consumers can download and use. The specific app options and settings available to a consumer depend on his or her decision to use a particular voicemail service provider and the provider’s unique voicemail app. A consumer may use these options and settings according to his or her personal preferences. Many third-party voicemail service providers compete by offering a variety of features and functions. Some of these voicemail apps are free while others are not. Some provide free voicemail services but charge for additional features and options.

12. Alternatively, if a consumer wishes to have voicemail service, but does not wish to use a voicemail app, the second way the consumer may access voicemail and listen to voicemail messages is by dialing the voicemail service provider’s direct access number. For the consumer’s convenience, this access number typically is stored in the consumer’s cellular device as a ‘speed dial’—a number dialed when the consumer long-presses the ‘1’ button on the keypad or a speed dial code such as ‘*86.’

13. However, regardless of whether a consumer decides to access and listen to their voicemail using an app or by manually ‘dialing in’ to listen to voicemail messages, the consumer must first perform a series of actions to ‘setup’ or activate his or her voicemail

account with their selected voicemail service provider. As part of this voicemail setup process, a consumer typically establishes a password and records a personal voicemail greeting or selects a system-provided voicemail greeting. During the voicemail setup, a consumer also may set a variety of features according to his or her personal preferences—including whether or not the consumer wishes to receive new voicemail notification alerts on their cellular device.

II. HOW DDVM WORKS

14. DDVM uses the technology I developed in 2009 and 2010 called Adaptive Signaling (Adapti-Sig). Adapti-Sig is a VoApps-managed, cloud-based platform that makes a connection directly to the voicemail service provider's voicemail platform that serves a cellular user who has elected to use voicemail. To understand how this technology works, we first need to outline some basics about the telephone network.

15. As depicted in Figure 1, the telephone network fundamentally consists of three parts:

- a. The Radio Access Network (RAN) segment of the network contains the transmission equipment for the cellular network. The RAN includes the familiar cell towers and their

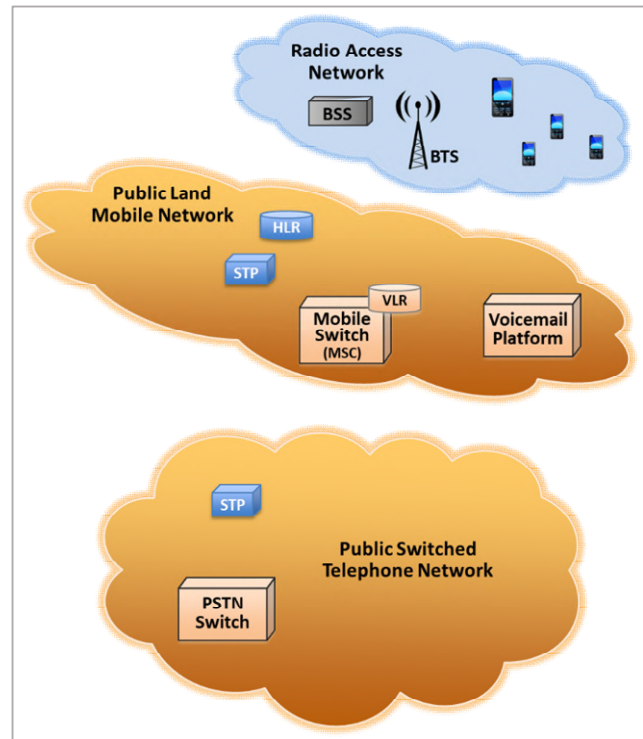


Figure 1. The 3 Main Parts of a Telephone Network

radio transmission equipment,² as well as consumers' actual cellular devices and phones.

The geographic area the RAN covers is commonly called a 'cell.'

- b. The Public Land Mobile Network (PLMN) is the land-based segment of the cellular network³ that provides switching and transport for the cellular network. The PLMN includes the equipment that is used to interconnect the many 'cells' in the cellular network. PLMN equipment typically is housed in a cellular carrier's central office or data center.
 - c. The Public Switched Telephone Network (PSTN) is the segment of the telephone network that houses the traditional landline-based telephone network.⁴ PSTN equipment typically is housed in a carrier's central office.
16. Of note in the PLMN 'cloud' is the element labeled 'Mobile Switch'. Every cell tower is connected to a Mobile Switch and typically a cluster of several 'cells' are served by a single Mobile Switch—creating the 'cellular network'.
17. In addition, every cell phone subscriber has a record of the services and features that he or she can use. It is called the subscriber's "Service Subscription Record" and it is stored in the telephone network on a Visitor Location Register (VLR), which is located within the Mobile Switch.
18. When a consumer carries his or her cellphone from one cell coverage area to a cell coverage area in another Mobile Switch's territory, the network sends a copy of that subscriber's Service Subscription Record to the new Mobile Switch, so it knows what

² Newton, H. (2013). Newton's Telecom Dictionary 27th Updated & Expanded Edition. New York: Flatiron Publishing at 977.

³ Noldus, R. (2006). CAMEL Intelligent Networks for the GSM, GPRS and UMTS Network. John Wiley & Sons, Inc., at 2.

⁴ Sauter, M. (2011). From GSM to LTE An Introduction to Mobile Networks and Mobile Broadband. John Wiley & Sons, Inc., at 11.

features the consumer can use while the consumer is located within that particular Mobile Switch's cellular area. The VLR where the subscriber is currently located always stores the most recent version of the subscriber's Service Subscription Record. The VLR allows the various Mobile Switches within the cellular network to know where cellular customers are located at any given time to say, connect a call to that user's phone.

(These same parts of the network allow law enforcement to use the cellular network to track where cell phones, and presumably their users, were located at any given time).

19. The Service Subscription Record that is forwarded and housed in each Mobile Switch's VLR as the cellular user moves from cell to cell contains, among other things, a piece of information called the Forward-To-Number or ("FTN"). An FTN is a telephone number that a voicemail service provider provides to a voicemail subscriber for use in connecting to that voicemail provider's platform. If the cellular subscriber subscribes to a voicemail service, there will always be a FTN number housed within in their Subscription Service Record. That FTN number is the business class, landline telephone number assigned to the voicemail platform of the voicemail service provider that the cellular user has chosen.
20. As detailed below, only the network components contained within the PLMN and the PSTN are implicated in Adapti-Sig's operation. Stated differently, the Adapti-Sig technology does not interact with any components of the RAN network (*i.e.*, the part of the network that houses the radio equipment necessary to receive cellular calls and communications). The RAN is depicted as the blue cloud in Figure 1 and includes radio transmission equipment and the user's cellular phone. All of Adapti-Sig's interaction with the telephone network and the associated messages occur within the two land-based

components of the telephone network, the PLMN and the PSTN, which are depicted in gold in Figure 1.⁵

21. Figure 2 expands on Figure 1 by adding the Adapti-Sig related components alongside the telephone network elements depicted in Figure 1. The computing servers used by the Adapti-Sig technology and depicted in Figure 2 consist of cloud-based, rack-mounted servers provided by a cloud service provider. The current Adapti-Sig cloud service provider is Amazon Web Services (AWS). In addition, pre-recorded voicemail messages are stored in the cloud and are referred to architecturally as the Media Cluster.

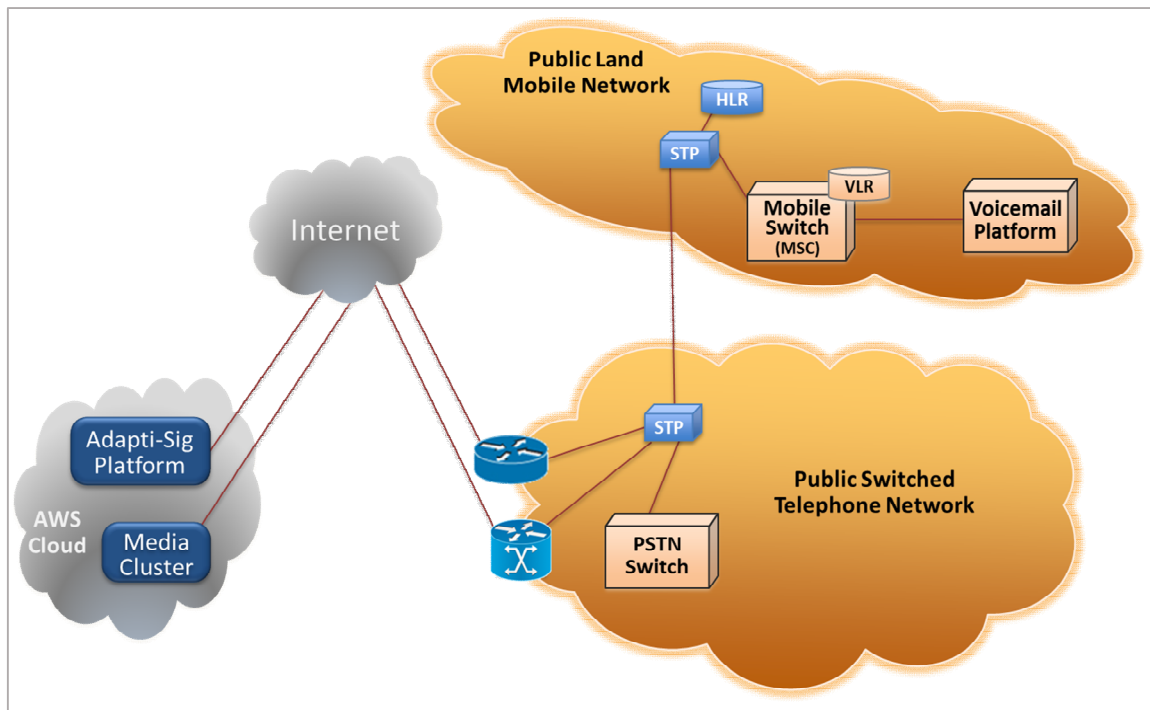


Figure 2. Adapti-Sig and the Telephone Network Architecture

⁵ When the cellular network was initially constructed in the mid-1980s, the equipment in the PLMN and RAN was deployed. Then, in the mid-1990s, as voicemail became a popular service, carriers widely deployed voicemail platforms in the PLMN to support cellular voicemail services. At the same time, landline carriers also added voicemail servers to the older PSTN landline segment of the network to support the migration away from answering machines to voicemail services for landline users.

22. Figure 2 also shows the signaling paths associated with Adapti-Sig and the various network elements of the PSTN and PLMN. These signaling paths are depicted in dark red. Signaling paths allow the various network elements and components to communicate and coordinate with each other,⁶ creating the ‘signaling network’ in which the Adapti-Sig technology operates.

23. Again, note that the RAN is not portrayed in Figure 2 as it is not used by or involved with the Adapti-Sig technology utilized by DDVM. As the Adapti-Sig technology never touches or otherwise interacts with the RAN, it is incapable of making a voice connection with a cellular device. Stated differently, Adapti-Sig never makes a call to a cellular phone, as further explained below.

24. When Adapti-Sig is ready to deliver a DDVM to a cellular voicemail subscriber, DDVM’s Adapti-Sig technology sends network signaling events into the signaling network over the signaling links depicted in dark red in Figure 2 above. These signals locate the Mobile Switch that is currently serving the voicemail user and create a signaling scenario that causes the Mobile Switch to access the subscriber’s Service Subscription Record where the voicemail user’s associated FTN (*i.e.*, the business class, landline telephone number assigned to the voicemail service provider’s platform) is stored.

25. Figure 3 on the following page depicts the next steps taken by the Mobile Switch. Once the Mobile Switch obtains the FTN, in accordance with ITU standards, the Mobile Switch (which is located in the PLMN land-based segment of the network) makes a connection from itself directly to the voicemail server platform that hosts the voicemail

⁶ Noldus, R. (2006). CAMEL Intelligent Networks for the GSM, GPRS and UMTS Network. John Wiley & Sons, Inc., at 28–29.

subscriber's account. In other words, the ITU standards stipulate that the Mobile Switch must initiate a separate and distinct connection—originated by and from the Mobile Switch itself—and this connection is made to the voicemail server that has been assigned the FTN, *i.e.*, the telephone number assigned to the voicemail service provider's voicemail platform as found in the Subscriber Service Record.⁷ In Figure 3, this Mobile Switch initiated connection between itself and the Voicemail Platform is indicated by green arrows.

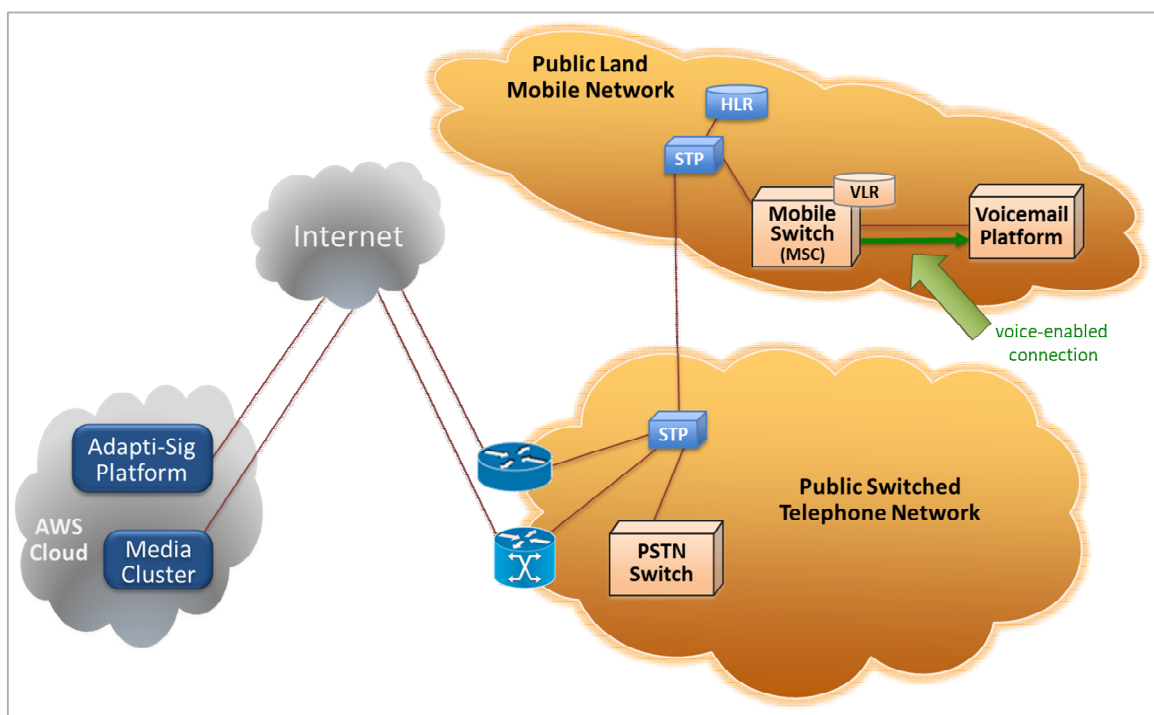


Figure 3. Mobile Switch Initiated Connection to the Voicemail Platform Telephone Number

26. Once the voicemail service provider's voicemail platform accepts the connection from the Mobile Switch, the Mobile Switch then sends a series of signaling messages to create a connection to the Adapti-Sig Media Cluster as depicted in Figure 4. There are several signaling messages flowing back and forth, but the net result is that the Mobile Switch

⁷ *Id.* at 118.

joins or ‘conferences’ the connection it made to the Voicemail Platform Telephone Number to the connection it sets up to the Adapti-Sig Media Cluster. Once both connections are made, and information is transferred, the system has established an end-to-end call, complete with an audio path, between the Media Cluster and the Voicemail Platform and the voicemail message is played into the voicemail subscriber’s designated voice mailbox.

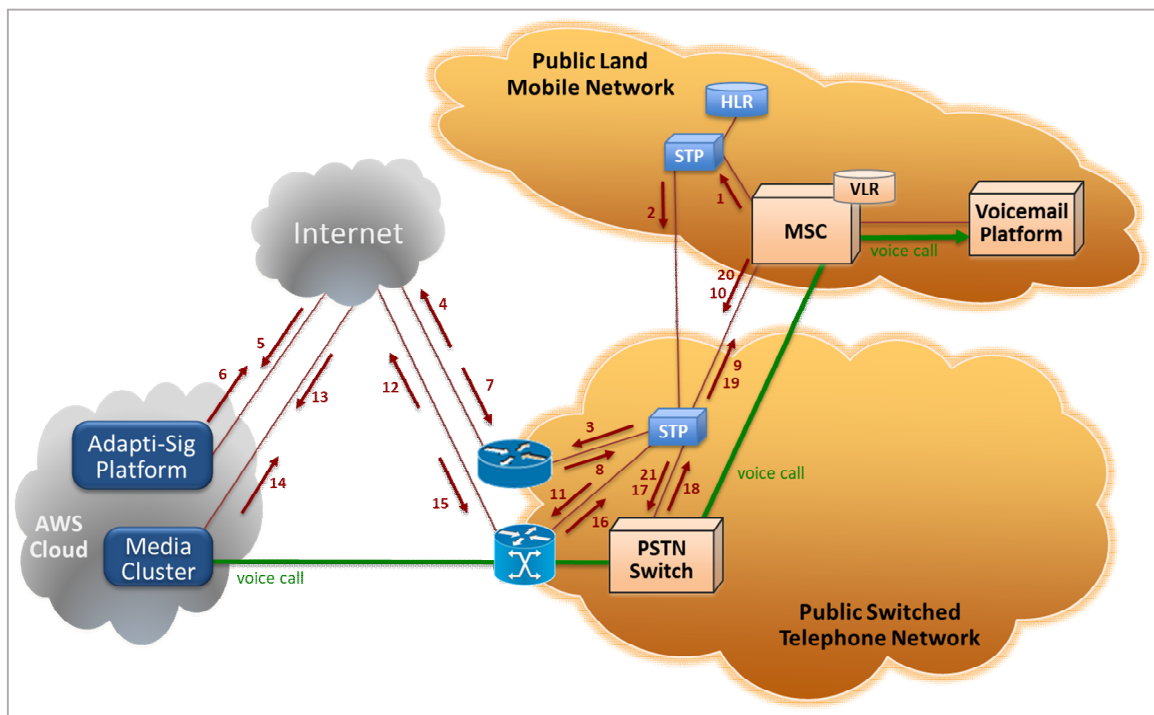


Figure 4. Signaling Flow to Connect the Voicemail Platform to the Media Cluster

27. For better clarity, Figure 5 below removes the signaling flows and simply and depicts the resulting voice call path as green lines. The result is an end-to-end connection between the VoAPPs Adapti-Sig and Media cluster and the voicemail service provider’s equipment. Once that connection is established, the Media Cluster plays the voicemail message into the voicemail subscriber’s voice mailbox. The Media Cluster plays an actual audio stream across the connection between itself and the Voicemail Platform.

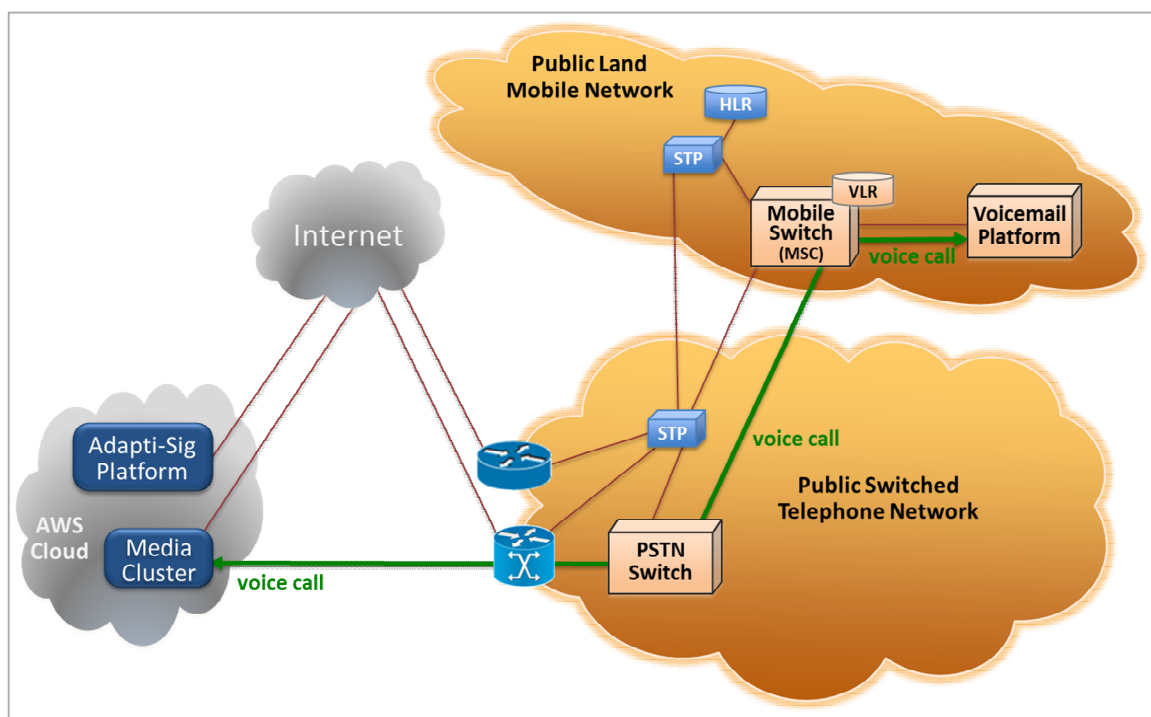


Figure 5. Adapti-Sig Platform to Voicemail Platform Call Path

When finished playing the message, the Media Cluster signals the network to disconnect the Voicemail Server connection and all other connections, thereby completing the required steps outlined as the definition of a call by ITU standards. At this point, the voicemail message delivery is complete from Adapti-Sig's standpoint. There is no further action taken by Adapti-Sig regarding the delivery of that voicemail message—other than to report the results of the DDVM delivery back to VoAPPs' client.

28. The Adaptive Signaling technology that delivers DDVM bypasses the traditional way of leaving voicemail messages for consumers. Instead of a call being made from Adapti-Sig to a cellular handset, the technology only makes a call between the Adapti-Sig servers and the servers comprising the voicemail service provider's voicemail platform, each of which are owned by business operators. This call is a landline-to-landline connection, a

business-to-business connection that VoApps pays for at business class rates.⁸ Both ends of this connection terminate in physical servers located in a telephone company central office or in another third-party data center environment. These physical servers are not mobile; they are typically rack-mounted, and they are ‘hard-wired’ to the telephone network via copper or fiber-optic connections. Both the Adapti-Sig and the Voicemail Platforms are assigned landline telephone numbers. Again, the RAN is not being used in the process at all, and no call is placed to the consumer’s cellular phone number. Instead, the only call made is to the consumer’s voicemail service provider’s business class, landline number assigned to its proprietary voicemail platform.

29. Thus, the DDVM technology (referred to as Adapti-Sig) initiates a landline connection to a business class telephone number assigned to the voicemail service provider’s platform—not to the telephone number assigned to the consumer’s cellular telephone service. Once this connection is established, a voice path is directed to the connection, and the pre-recorded message is played into the voice mailbox by the Media Cluster. In other words, the DDVM technology does not make any call within the meaning of ITU standards to the telephone number assigned to the consumer’s cellular telephone service.

III. HOW SENDING A DDVM IS DIFFERENT THAN SENDING A TEXT

30. SMS text messaging is a commonly used communication service provided by cellular carriers. Unlike voicemail service, cellular carriers assign the same telephone number to a consumer’s SMS text service as their cellular service. In addition, unlike voicemail, consumers do not have to initially setup or activate their SMS text service. Offered as an

⁸ Even for consumers who may still have ‘minutes of use’ based service plans, VoApps pays for the delivery of the DDVM to the voicemail platform. No consumer minutes of use are incurred, as there is no call made to the consumer’s cellular service in the delivery of a DDVM.

‘opt-out’ service, SMS text is active soon as their cellular network account is enabled—usually before the customer leaves the carrier’s store.

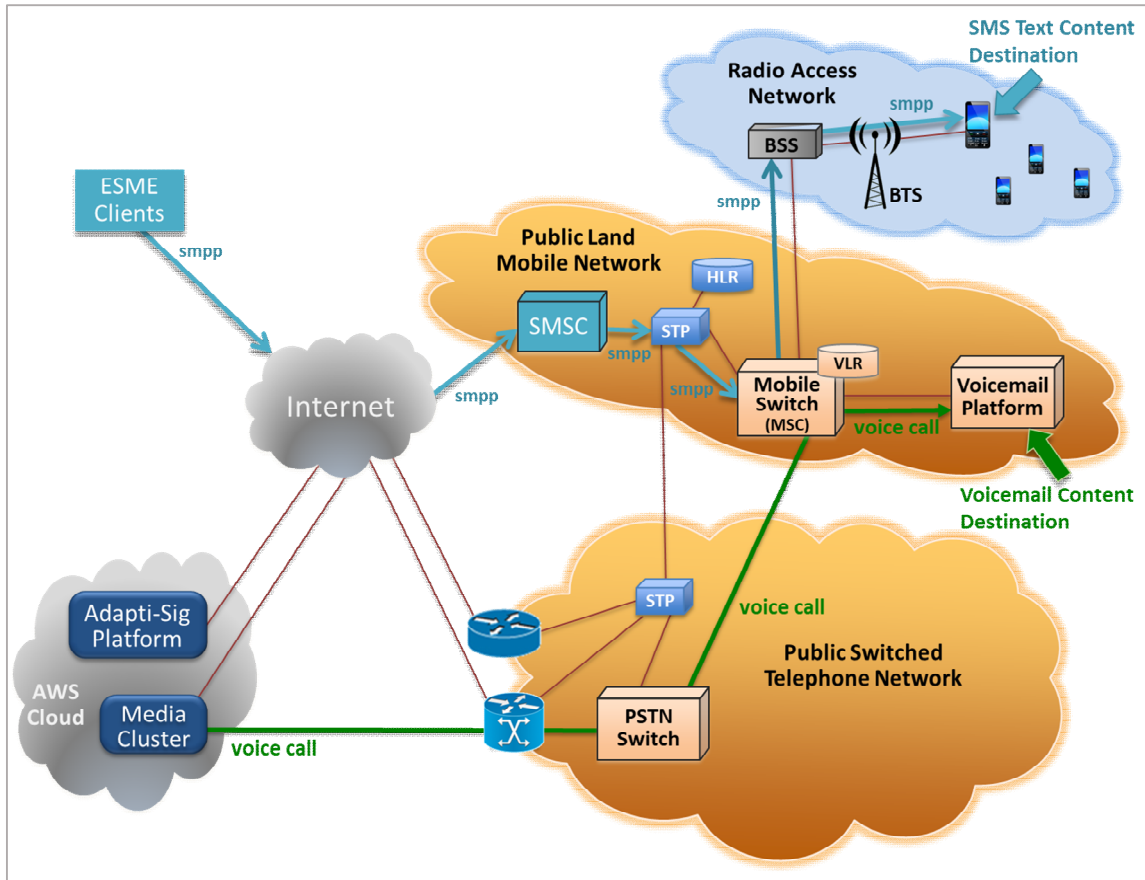


Figure 8. The Telephone Network Architecture of Voicemail Versus SMS Text

31. SMS text differs significantly from voicemail service. As depicted in the teal color in Figure 8, SMS text and voicemail services use different network equipment, have different transmission paths through the network (including SMS text’s travel through the RAN—which is not traversed by DDVM messages), and each has a different destination for the message content. Additionally, SMS text uses a different protocol called Simple Message Peer to Peer Protocol (SMPP)—a completely different set of technical standards than used by voicemail. Accordingly, SMS text message services and the associated

SMS text message delivery mechanism are significantly different from that of a DDVM message.

32. In summary:

- a. For a consumer to hear any voicemail message, whether delivered through a traditional channel or via the DDVM delivery process, all of the following must occur:
 - i. The consumer must: (1) elect to receive voicemail services; (2) select a voicemail service provider; (3) activate his or her voicemail service account with a voicemail service provider; (4) establish voicemail notification and display preferences; and (5) log into his or her voicemail service provider's voicemail platform (either by app or by dialing) to retrieve the voicemail.
- b. DDVM does not access any part of the RAN portion of the mobile telephone network, which is required to connect to or communication with a cell phone. Instead, using the patented Adapti-Sig technology, DDVM establishes only a landline connection between two business class numbers for which VoApps pays business class rates. Once that connection is established, the message is deposited directly into the voicemail service provider's platform for the consumer to retrieve and listen to at the consumer's convenience, should he or she elect to do so.
- c. The DDVM delivery process does not initiate any call or other communication to the consumer's assigned cellular telephone number. Instead, DDVM uses the consumer's cellular number to locate the consumer's Service Subscription Record

within the Mobile Switch currently servicing that mobile account. Once located, Mobile Switch actions retrieve the FTN (i.e., the telephone number) assigned to the voicemail platform of the voicemail service provider that the cellular user has chosen, which is then used by the Mobile Switch to establish a direct connection to the voicemail provider's platform. The Mobile Switch then creates a second connection to the Adapti-Sig Media Cluster, joins the two connections into a single end-to-end connection and the Media Cluster plays the voicemail message over that end-to-end connection, culminating in a landline-to-landline call.

Pursuant to 28 U.S.C. § 1746, I declare under the penalty of perjury under the law of the United States of America that the foregoing is true and correct.

Executed this 3rd day of September 2019 in Atlanta, Georgia.



David A. King