

White Paper

VCOM Media Gateway

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INTRODUCTION

This White Paper describes unified communications challenges and how a media gateway can help to overcome these challenges.

Interconnectivity between communications systems and devices is crucial for applications today where sensitive and timely distribution of information is of the utmost importance. Lack of connectivity can result in life threatening situations, increased ecological damage, and impaired evacuation capabilities, among others. First responders are especially hindered when important information is not relayed in a timely manner between various agencies associated with a major event. The VCOM media gateway, by Intracom Systems, is the heart of the solution and can be deployed in many scenarios to help unify customer's communications platforms.

PROBLEM STATEMENT

Divergent systems suffer from a lack of connectivity which can affect ongoing operational efficiency, specifically during times of emergency. Lack of connectivity can result from line of sight issues, divergent platforms, closed radio groups, or radios operating on different frequencies.

Without connectivity between radio systems, IP systems and cellular networks important and urgent situational information is delayed or cannot be delivered at all.

Cost savings are important to all entities and are a major factor in system evaluation. Adding a media gateway results in a lower cost point than many other dispatch and public announcement systems while giving greater flexibility to integrate different communications devices. The ability to quickly relay important information between teams in the field, members of a data or control center and decision makers is vitally important. Quick and efficient communications result in cost saving and more importantly lives.

Figure 1 Long message chain without VCOM in school



PROPOSED SOLUTION

Introduction of Solution

VCOM, by Intracom Systems, is a multi-access communications and tactical intercom and conferencing solution for professional and mission critical applications. VCOM acts as the central connectivity point for all communications between radios, Voice over IP (VoIP) networks and cellular phones.

VCOM ties all the divergent platforms together in one cohesive unified communications system allowing all users to communicate with each other seamlessly.

Application of Solution

VCOM is the central connection point, so adding radios, VoIP phones, and smartphones is easily accomplished. Flexibility of deployment is essential to VCOM and a vital consideration from an operational point of view. Using VCOM allows administrators to quickly add users independent of the platform being deployed. As the number of concurrent users increases, it is a simple process to increase the licensing to accommodate the increased number of users.

Users can be connected independent of their communications device and organized into fixed groups or party lines. VCOM's smartphone application allows users to connect into the media gateway using either a cellular phone data network or WiFi, if in the range of the WiFi access point. Smartphone users

seamlessly transfer between WiFi and the cellular phone network. VCOM will automatically and seamlessly switch smart phone users between a WiFi network and the cellular network resulting in reduced cellular data usage.

VCOM's core architecture is based on the industry-standard Session Initiation Protocol (SIP) which allows a wide variety of devices to be connected resulting in quick setup with minimal effort. In order to connect push-to-talk radio systems into the VCOM media gateway a Vocolity BASICS Radio Relay is used. Vocolity products, including the BASICS Radio Relay, provide a very cost-effective means of tying radio communications to other SIP devices. This allows a first responder in the field using a radio to directly communicate with a situational commander outside radio range using a smartphone.

Smartphones are connected via two methods. Smartphones can be connected using a local WiFi network or via a cellular data network. When a smartphone user leaves the WiFi area, the user is automatically transferred to the cellular network. When the user returns to WiFi range, the system automatically connects via WiFi. Cell phone roaming is accommodated between WiFi and cellular networks seamlessly, allowing the user to move about without concerns of losing connectivity.

Figure 2 VCOM user interfaces



VCOM's graphical interface provides dispatch capabilities that allow patching of groups and individuals, including cross banding of disparate radio systems and frequencies. Digital, analog, P25, and Tetra radios are easily connected with the easy-to-use application.

Network architecture is very flexible with VCOM allowing many options for deployments. Because VCOM is an IP-based system, it can operate in a closed corporate WAN environment with no reliance on the Internet, or it can be hosted in a cloud environment. In the case where local infrastructure has been compromised, ad-hock LTE networks can be established and used to provide communications. If high-availability is required, VCOM servers can be configured for redundancy with the servers in geographically dispersed locations. This prevents regional outages from affecting the entire network so users outside the outage area can continue to communicate.

DEPLOYMENT SCENARIOS

A large school district was looking for connectivity between multiple radio bands, smartphones and terrestrial analog phones. By integrating VCOM with Vocality's BASICS Radio Relay interconnecting several radio systems with phones was easy. VCOM enabled various groups such as security, facilities staff, principals, and nursing to communicate without the need to have a user manually relaying information from one form of communication to another. Further capability was added, allowing reach to the 911 center when required, so the 911

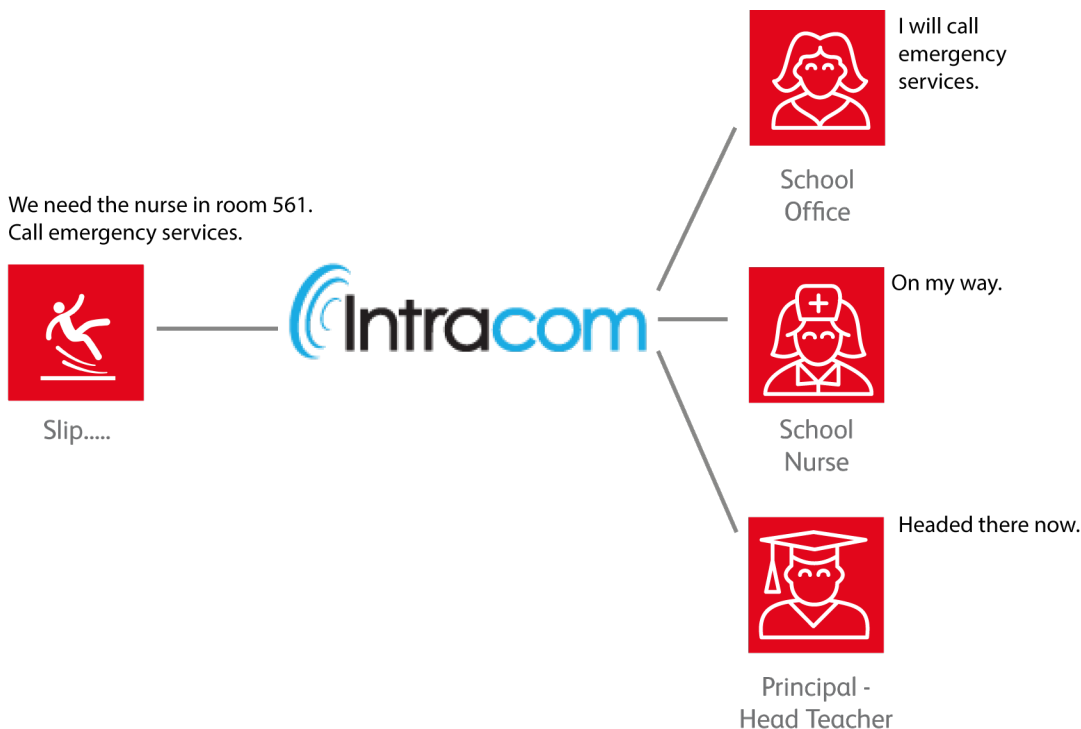
center can directly communicate with the first responders and school faculty.

A retirement community required the capability of reaching residents who might be in an emergency situation quickly and easily. Using Vocality and VCOM, they were able to connect the retirement community staff radios to a dispatcher, off-site management and the local Public Safety Access Point.

A large bank involved in trading activities was seeking a means to connect smartphones and intercom systems to facilitate communication of trading activities to areas their traditional intercom system couldn't reach. It is now possible for them to relay important information to a trader anywhere in the world as long as they have Internet connectivity.

A major company that creates ad hoc 4G/LTE networks integrated VCOM with Vocality BASIC Radio Relay in a small flyway kit. The kit is used to increase communications range by establishing a local 4G/LTE network during major disasters, where the local infrastructure has been compromised. This solution allows first responders radio networks to communicate with users that may only have smartphones.

Figure 3 School emergency with VCOM



CONCLUSION

VCOM, when combined with Vocality's BASICS Radio Relay, provides a cost-effective solution for operationally challenging networks. The ability to seamlessly tie various forms of communication into one cohesive network allows the timely dissemination of information. As a result of these combined technologies lives can be saved, as decisions can be made in real-time without the delay caused by humans relaying information over multiple mediums.

ADDITIONAL INFORMATION

For Vocality products:
<http://www.vocality.com>

For VCOM:
<https://www.intracomsystems.com/vcom-matrix-intercom-products-and-services/vcom-virtual-communications/vcom-platform-overview/>

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