

REDCOM® Solutions for Military Mobility

REDCOM systems support a variety of endpoints that empower the modern warfighter

When people talk about mobility, they are usually referring to smartphones accessing networks via secure apps. However, mobility also includes legacy secure terminals that need to access networks. REDCOM products work exceptionally well in both environments, delivering substantial features and flexible call routing capabilities for both legacy and SIP networks. Many of these features were developed specifically to support mission classified and unclassified networks, as well as traditional public and private networks.

Support for legacy equipment in a mobile environment with REDCOM systems

REDCOM's HDX and SLICE® products are hybrid TDM/SIP platforms and are certified by the DISA Joint Interoperability Test Command (JITC), giving network designers the ability to interoperate with almost any kind of military or public network worldwide. They provide multiple types of trunking interface protocols, enabling interoperability with almost every communications standard including SS7, R2, ISDN, and SIP. The beauty of being a hybrid switch is that it can be configured for combination TDM/SIP, just SIP, or just TDM. However, the huge benefit is that REDCOM tightly integrates both worlds into a highly functional and scalable switching system with common administration across both platforms. This significantly lowers training costs and saves valuable resources.

REDCOM's hardware platforms are unique because they:

- Share the same operating system and firmware, thus reducing onboarding and training
- Feature scalable architectures to fit many situational needs
- Allow for customization of firmware and hardware in a live system with zero down time
- Provide the ruggedness and reliability needed to be used by the armed forces and are battle tested through several major conflicts

One member of the REDCOM product family — the SLICE Micro — takes the functionality of REDCOM's larger SLICE system and condenses it into a platform optimized for very low SWaP (Size, Weight, and Power). The SLICE Micro runs the same operating system and is also JITC certified. This small switch was designed to enable legacy TDM switches with T1/E1 trunking to be able to interoperate with the SIP-based Defense Information Switching Network (DISN), and to provide SIP-based "line services" for base migration to SIP. Because of its size and capabilities, it has found a niche in applications requiring small size, easy administration, flexible translations, conferencing, and ruggedness.

As mentioned above, all of these switching platforms support SIP, to include commercial secure communications with TLS and SRTP protocols. This capability not only allows for secure communications to fixed SIP end terminals (phones, and more), but also provides secure communications to mobile devices, such as softphones and smartphones.

Secure Communications Support for SWT and STE Devices

The REDCOM HDX and SLICE products both support Type 1 encryptors, providing the means to act as secure gateways to DoD secure networks for SCIP (Secure Communication Interface Protocol) devices, such as STE (Secure Telephone Equipment) and SWT (Secure Wireline Terminal) products. The HDX supports STE and SWT connected devices and the SLICE 2100 supports SWT connected devices.

Once inside a secure network, all the other command and control features of the products come into play. A few examples follow.

Conferences can be initiated as meet-me, pre-set, or progressive, including mixing all three types in one conference. An operator's console can be equipped to manage access to conferences. A conference can include radios, ISDN phones and trunks, SIP phones and trunks, and digital and analog phones or trunks. The quantity of simultaneous talkers can be set, and priority talk levels can be assigned to individual members, guaranteeing that high-level members can be heard in the conference whenever they speak (based on priority and quantity of talkers).

As a gateway, SCIP callers can be routed: 1) to a fixed meet-me conference, 2) to an operator for special handling, or 3) be given dial tone in order to input a called number securely. Calls to local analog, ISDN, or SIP lines, combined with trunking from the gateway switch to SIP or TDM networks, enable interoperability to virtually any C2 (Command and Control) network. As an example, a REDCOM switch provided the first gateway to the Kuwait public telephone system for the Coalition network.

Support for Radio Interfaces

REDCOM products have some of the most flexible digit translation capabilities, with protocols that can allow or restrict any digit pattern dialed from lines or trunks, right down to allowing or denying one specific number. The translator can handle multiple area codes and multiple digit tables. These digit tables allow different dialing plans for each trunk or line user.

The REDCOM HDX and SLICE 2100 can be configured with a radio interface that provides wireline access connections, enabling interoperability with almost any secure or non-secure radio type. This includes all military radios which support the standard audio connector, and virtually all non-mil radios which support microphone/speaker connections. The plethora of features this card-type supports includes:

- In and out gain controls
- In and out VOX operation

- DTMF Pressel keying
- Positive PTT control from REDCOM's softphone and smartphone clients
- COR discrete lead keying for radio relay
- Inward seizure and making calls from network radios
- Audio outputs for command facilities
- Dial-up monitoring from the land-side network (with password and ANI screening)
- and more

This versatile card is designed to be a problem solver for radio communications, especially for tactical applications.

Multi-Level Precedence and Preemption (MLPP)

All REDCOM products support Multi-Level Precedence and Preemption (MLPP) for lines and trunks, including SIP and special service ports, such as radios. While many communicators take the position that wide-bandwidth IP networks have negated the need for MLPP in SIP networks, others (especially in the tactical arena) still recognize the need to maintain MLPP capability. They point out that bandwidth constraints for tactical networks can be imposed without warning (think Denied Environments), making MLPP essential to their communications survival. They also point out that many types of legacy hardware endpoints still require MLPP to free up resources for priority traffic, especially when NATO communications are involved. Given the monetary constraints NATO has suffered these many years, MLPP is likely going to be a need for a long time to come.

The MLPP feature set in REDCOM switching products provides for both standard and ruthless preemption. In the standard method of preemption, the system alerts the end-point device that a priority call is incoming, and that user chooses to accept or reject the call. In ruthless preemption, the circuit is preempted without action by the endpoint. This critical capability provides access to circuits like radios, announcement systems (Giant Voice), Satcom modems, and other special circuits.

The MLPP feature also allows for special or unique applications, such as:

- Upgrading or downgrading an MLPP call level between networks (Coalition, NGO gateways, etc.)
- Converting an MLPP level to/from the E1/R2 priority protocol
- Using the translator to establish priority levels decoded from incoming non-standard digit streams (alerting networks, Coalition networks that don't use the MLPP standard, etc.)

Conclusion

This paper is intended to inform the reader about the flexibility REDCOM products, especially the HDX and SLICE products, bring to the communicators toolbox. Many of the features in our systems are specifically designed to support mobile devices. Our 40-year history of providing deployable systems to communicators continues as specific mobile products are created to enhance interoperability supporting modern communications.

The few examples outlined above provide insight into the thought and development REDCOM has put into our products to provide real solutions to complicated communications networks, especially those related to Command and Control. However, REDCOM switching systems are not only used in C2 networks as outlined above, they have been used globally for 40 years in public and private switching systems in many countries. They are renowned for their ruggedness and reliability, and have been proven survivable in the dust storms, deserts, and mountains of Iraq and Afghanistan where other systems have failed.

For more information on REDCOM's robust solution set, please visit www.redcom.com or call our Government and Commercial sales teams at 585-924-6500 to discuss your application.