CISCO™

DEFENCE SERVICES

PATHFINDERS OF THE MODERN DAY BATTLEFIELD

Defence systems throughout history have always been the vanguards of change and the present is no exception to this trend. The battlefield today is more complex than ever before and it is technology leaders like Cisco, who are turning ICT into the real warhead of modern wars.

Defence forces today have transformed themselves from fire guzzling, bullet showering groups of the past to well integrated service theatres. And, it is the nature of their missions that has forced this change. Combat today, has shifted from national borders to our crowded urban centres and even virtual battlefields with the rise of terrorism and cyber warfare.

The scope of war has expanded with the advances in Information and Communication Technology (ICT). Wars today are fought as hard in the virtual world as they would be in the physical battlefield. The ICT capabilities of a defence establishment are a key variable in the equation determining its overall strength. KPM Das, a renowned speaker on Information & Net Centric Warfare says, "Modern warfare is conducted with precision and focuses on disabling enemy infrastructure and vital areas/points. Modern warfare invariably requires ICT capabilities in the form of robust networks which are failsafe and support both speed and throughput."

Getting it Right

In order to be more agile and efficient, not only do you need a smart and visionary leadership but you also need to find the right partners who can support you

build robust ICT networks and capabilities. There are only few companies in the world who have the technical expertise and functional capability to support a modern day defence network. KPM Das says, "You have to be very careful with the choice of people you work with as only few partners like Cisco, with its embedded experts with combat experience, can assure you of an effective, responsive and responsible outcome."

Anatomy of ICT

ICT in defence force is two pronged- on one hand is the OIS (Operational Information Systems) that enables military operations and on the other hand is the MIS (Management Information Systems) that facilitates the administration and logistics. While OIS is primarily based on the principles of war and established battle work flows and hence needs customization, the MIS is not very different from that of what is used in the civilian domain.

Fitting the Bill

Today's situations of conflict put defence personnel into complex situations that demand agility and mobility of information to expedite tactical operations. Defence personnel and first responders need dynamic information that is ready

to go, including biometrics, location telemetry, and real-time video to enhance situational awareness. Field staff must be able to collaborate and share information with each other, commanders and headquarters while on the move. This growing demand for increased collaboration in these communities now drives the need to network everything that walks, flies, drives, or sails. Advances in the Internet Protocol (IP) domain are at the centre of achieving all these requirements that effectively define the profile of a 'Smart Network'. Let's explore how?

Smart with IP

A Smart Network is the platform that improves agility, creates new opportunities for innovation, and provides more options for meeting a mission's operational requirements. In the present context the efficacy of a network lies in its ability to converge voice, video, and data applications into unified communications. IP networking has become the foundation for converging voice, video, and data applications into unified communications and is the single internationally adopted networking standard. This unique combination enables disparate defence units and formations to connect and collaborate in ways previ-

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How can advances in ICT technology save casualties in modern day warfare?

Over the past two decades, warfare has undergone a paradigm shift. With near-zero tolerance on casualties, both own and hostile, outcomes have to be measured and delimited. ICT advances attained by players like Cisco provide the defence establishments around the world with flexibility, security and high degrees of redundancy that are the key to securing objective of minimal loss of human life through efficient and collaborative operations.

How can innovations in military technology be put to benefit the society at large?

If you look at history of emergent technologies, military needs have been the catalyst for technology disruptions and innovations. However, over years, civilian, enterprise and consumer requirements have driven new products and solutions with dual-use possibilities. There are some areas, though, where military technology continues to provide leadership - the ones that come to mind are aviation and aerospace, satellite platforms, crypto-solutions and innovations in sensors and surveillance. Take the instance of a technology disruptive solution- Cisco's IRIS (Internet Router In Space) which provides immense advantages to the Service Providers allows organizations to reach multiple continents from a single connection to network infrastructure. The converged Cisco IRIS solution enables voice, data and video traffic over a sin-

KPM Das
Vice President, National Security and Defence, Cisco India

gle IP network to increase efficiency and flexibility compared to more fragmented satellite communication networks.

How are Cisco products being deployed in the defence vertical?

Cisco has been a leader in innovating and providing cutting edge solutions for defence forces around the world. A look at two of the most intense military engagements of recent times will reveal that WIN-T and FALCON networks, both of which are based on Cisco technologies, support US and NATO combat forces, which support echelons in Iraq and Afghanistan. At a time when command and control has moved on from voice to voice-and-video, with commanders requiring enhanced level of collaboration in Command Posts, Cisco TelePresence solutions are extensively used the world over by the defence forces. A number of other technologies and products are also being used by defence forces worldwide.

CASE STUDY

Building future war strategists

As officer-leaders undergo strenuous tactical training, one can smell legacy and tradition at the Army War College (AWC), Mhow in Madhya Pradesh. It is one of the premier training institutes of the Indian Army and focuses on training officers to become combat leaders and commanders equipped with the best strategy and tactical tools of warfare.

Training the strategists right

No officer who administers a strategic or tactical position in the army can afford to ignore the role of Information and Communication Technology (ICT) in modern day warfare. Therefore it is critical that these future strategists get a taste of the most advanced ICT applications that are fast embracing the operational and reporting structures of the Indian Army throughout. In order to do this the college must provide a real-life war environment for training its recruits.

Building the network

"As we realized the compelling need of enhancing and optimizing training utilizing the potential of IT and related tools, we knew the first step

was to network our campus", said Col SP Kochhar (now Lt Gen SP Kochhar, AVSM and Bar, SM, VSM, Signal Officer In Chief). In order to expedite this, the Army War College deployed a state-of-the-art network to enable training applications through the use of technology aids like smart cards, video conferencing, e-books, interactive whiteboards, video projection systems etc. The college partnered with Cisco to deploy a solution which provided network reach across the vast campus.

The college also undertook a communications infrastructure upgradation exercise aimed at making the campus one of the most advanced ones in India. AWC had considered xDSL solutions from various vendors before finalizing on Cisco. The college now has a gigabit fiber optic network with a Cisco Catalyst 6500 layer 3 core switch and Cisco Catalyst 3500 layer 2 edge switches. These are coupled with Cisco's network management solution and VSAT-based Internet and leased lines for wide area connectivity.

The connected campus

Today the Army War College is networked with a layer 3 end-to-end fully managed network. The network pro-

vides converged voice and data to a distributed population in the campus, which consists of buildings that are widely separated and outside Ethernet range. The network also provides WAN connectivity, Web services, e-books, OLAP, LDAP based smart card systems, server farm, Net purchases, IP-based video conferencing, learning labs and a host of office automation programs. The advanced network solution from Cisco has not only seen future war field scenarios being simulated right on campus but it has also percolated the culture of automation and on line collaboration which are going to be the key to future warfare.

Some years ago, when the network was deployed, Col SP Kochhar (now Lt Gen SP Kochhar, AVSM and Bar, SM, VSM, Signal Officer In Chief) elaborated on the benefits for the campus, "the campus is justifiably proud of using the latest and relevant peripherals that aid in training. AWC had decided on a time bound plan to introduce IT on the campus not only to aid in training, but also to provide decision support systems akin to those that will be existing in the future environment. The benefits are already visible and the college intends to continue to grow its IT infrastructure."

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ously unavailable. IP networking enables collaboration between everything that flies, drives, walks, or sails, and it allows collaboration between people, places, and things that had been constrained by limitations in geography and a single method of communication. Unified communications on an IP infrastructure provide unique global accessibility with the potential to reach anyone, anywhere, using any communications device—whether it is in a soldier backpack, on an airplane, or on a ship.

The Indian Connect

The Indian Armed Forces have acknowledged IP as a redundant protocol to replace legacy inflexible circuit-switched network and ATM based networks. Packet-based networks provide outstanding redundancy with automatic reroute and failover capabilities. Efficient transport protocols such as TCP and Stream Control Transmission Protocol (SCTP) help ensure that data is not lost or received out of order, even if packets take different paths through the network.

In India, strategic and tactical networks

have already been deployed by the armed forces. They have moved away from second generation ATM and MSS based networks to IP-based architectures with significant focus on tactical routers and switches.

A Truly Strategic Partner

There is little ambiguity with respect to the high level of expectations that the defence forces all around the world have from technology providers in their transformational programs and India is no different. An ideal partner must be able to adapt to state-of-the-art technologies for the Indian defence market and meet the mandates of the Defence Procurement Policy in local manufacture and transfer of technology. Thus far continuing its global leadership, Cisco has partnered the Indian defence forces in revamping their networking infrastructure. The partnership has been successful till now and is expected to deepen further with new initiatives being planned to invigorate the ICT strength of the India defence establishment.