

WHITE PAPER

## **VoIP & Active Managed Networks**

Increase Productivity and Save You Money



# How VoIP & Active Managed Networks Increase Productivity and Save You Money

## *The Way to the Future!*

Often referred to as “level zero” in the 7 level OSI model, structured cabling has always been about connection flexibility and the ability to provide a common platform for all signals. Now we are seeing the convergence of the lower OSI levels, driven by a universal trend towards a common layer 2 in the form of the IEEE 802.3xx Ethernet and through the adoption of TCP/IP at layers 3 and 4.

As a consequence of this, the demands for the kind of physical cross-connecting flexibility that structured cabling has had in the work area in the past (shown in Figure 1), is now becoming less frequent. This convergence of layers 1 and 2 has given the network manager the ability to move the “connectivity” administration from a hardware related cross-connect function into a software controlled function. This has the potential to make the work area network (shown in Figure 2) much more dynamic and flexible and lowers both cabling equipment and installation costs as well as ongoing maintenance costs.

## What is Active Managed Structured Cabling™ (AMSC)?

AMSC is a cabling technology evolution invented by ADC KRONE. AMSC comes about when there is no longer a need to manage cabling through physical cross connects, rather, all management and administration is done through software control. This is realised when all user outlets in the network are wired “active” and are managed by Simple Network Management Protocol (SNMP). Hence there is no ensuing need for patch fields.

## VoIP and Why it Changes the Premises Cabling Scene

Most traditional business phone networks use the Public Switched Telephone Network (PSTN). This system employs circuit-switched technology that requires a dedicated voice channel to be assigned to each particular conversation.

Today, business phone networks are on a fast migration path to Voice over Internet Protocol, or VoIP. This is a system where the voice signal is digitised, compressed and packetised. This

compressed digital message no longer requires a voice channel. Instead, digitised voice can be sent across the same data lines that are used for the Intranet or Internet. The message can now share bandwidth with other voice, data and image messages in the network and the work area.

## Why Deploy VoIP?

Businesses today are demanding more from communication technologies. They want to communicate with their clients using voice, data and images, all of which require increased bandwidth. Communication networks offering this increased bandwidth - cable networks, company Intranets and the Internet are becoming more popular and the cost of bandwidth is fast reducing.

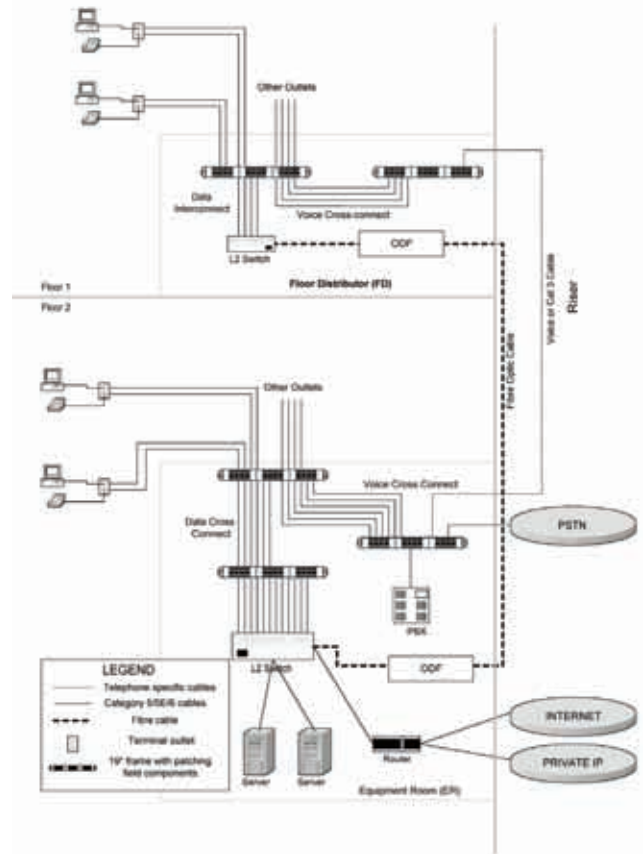


Figure 1

Consumers also want simplification by having all their communication services through one reliable network. A converged VoIP - data network, offers just this solution, allowing a business to use their existing data network to make telephone calls.

## The Next Generation of Structured Cabling

All of this has a significant impact on premises cabling. Structured cabling philosophy till now has been for a wiring solution that can carry both analogue voice and digital data signals. This was achieved by adopting a standard topology and cable type, which delivered each signal type over discrete cable pairs from active equipment in the equipment room and Floor Distributor, to the workstation.

VoIP enables both voice and data signals to be carried over Ethernet on layer 1 and share the same protocol. If required, the VoIP can be transported on the same cable pairs and the same active equipment in the work area as the non-voice data. With this situation the part of the premises cable network previously required for discrete telephony signals becomes redundant.

## The Need for Patching now Disappears

One major impact of this convergence is the advent of networks with “all outlets active” and the subsequent lack of need for patching fields. For most users the primary objective in implementing a converged solution is to reduce the cost, delay and time taken to implement moves and changes. VoIP telephony uses the handset’s (or workstations) IP address to route calls. Hence the VoIP handset, just like a network PC, can be moved from one workstation outlet to any other active outlet on the network and will function correctly with no work required apart from the physical move. This benefit, coupled with the continuing reduction in the cost per active port on switches, is leading to sites being cabled with “all outlets active”.

## What Replaces the Patch Panel in Active Managed Structured Cabling™

With an “all outlets active” network there is no longer a need for patch panels in the Floor Distributor. The workstation cabling is simply interconnected to the layer 2 switch via ADC KRONE’s unique high density Category 6 Ultim8® and HighBand® 25 Break-Access Modules. The Break-Access

feature incorporated in the Ultim8 and HighBand® 25 cable termination module provides connection access for data circuit testing and if required allows a means of service restoration, via patching, in the event of a switch port failure.

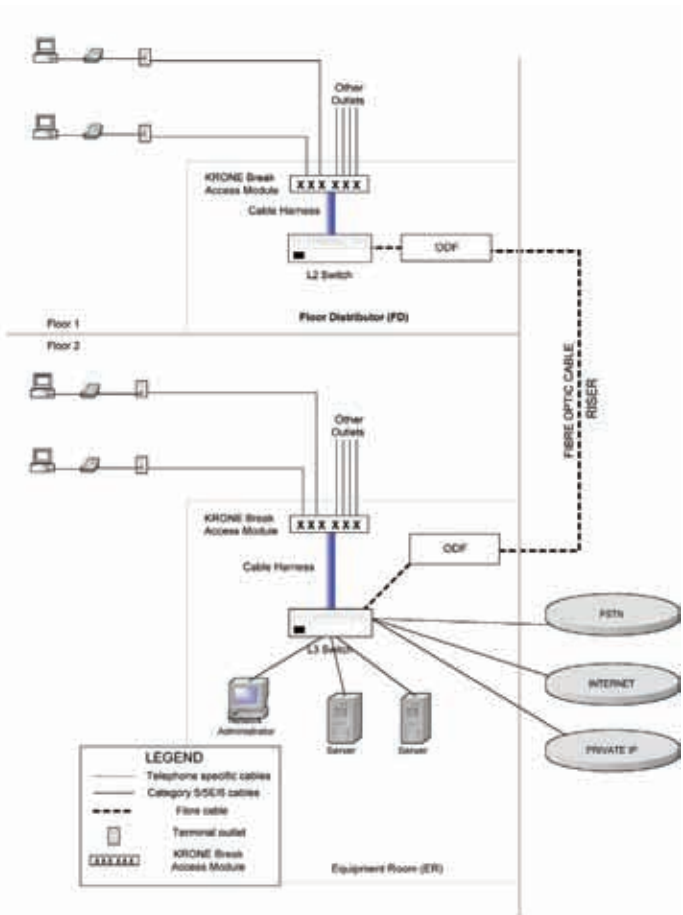


Figure 2

## The advantages of this are:

- Less cabling equipment space is needed in floor distributors and equipment rooms.
- Fewer expensive equipment racks, lower installation and connecting equipment costs and a more reliable network as a result of the elimination of patch panels and patch cords.
- Higher transmission performance due to the removal of cable length and the number of connection points in the circuit path.
- Lower administration and record keeping as Active Management stops unauthorised patching.

## Administration and Management of the Active Network

How does SNMP support network management? Simple Network Management Protocol was developed as a tool to allow network administrators to understand how the network is structured and how well the network is performing. This is done through the gathering of statistical data within the active device, such as a switch, router or server NIC.

## Administrative Tools and Statistic Analysis Available Within Active Managed Devices

A great deal can be learned through SNMP data collection and analysis. These include, but are not limited to:

**Network Identification** – This is important to understanding how the network has been structured.

**Utilisation** – Which, when gathered, can tell the network administrator a great deal about the traffic level on particular segments or the entire network as a whole.

**Traffic Type** – This is important to understand the level of Multicast, Unicast and Broadcast traffic across the network. It also helps in eliminating unwanted redundant protocols from taking up baseline utilisation.

**Capacity** – Helping to understand the data rate capability of segments within the network.

**Latency** – This statistic helps to understand where time delay is effecting network performance.

**Errors % & Type** – This statistic is critical to most of the above, as it relates to lost time and network efficiency and increases utilisation and reduces capacity.

**Duplexing/Auto Negotiation** – This problem is probably the single largest cause of slowing networks today. The ability of the Active Hardware to find the highest common denominator is not achieved in many cases. The result is a large number of collisions on a switched network.



KRONE



[www.adckrone.com/in](http://www.adckrone.com/in)

Corporate Office and Factory: P.B. No. 5812, 10C II Phase, Peenya, Bangalore – 560058 INDIA  
Tel: +91 80 28396101 Fax: +91 80 28396104  
TOLLFREE: 1800 425 8232  
OFFICE LOCATIONS: BANGALORE, NEW DELHI, MUMBAI, PUNE, CHENNAI, HYDERABAD

ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota USA 55440-1101  
Specifications published here are current as of the date of publication of this document. Because we are continuously improving our products, ADC reserves the right to change specifications without prior notice. At any time, you may verify product specifications by contacting our headquarters office in Minneapolis. ADC Telecommunications, Inc. views its patent portfolio as an important corporate asset and vigorously enforces its patents. Products or features contained herein may be covered by one or more U.S. or foreign patents. An Equal Opportunity Employer

401254IN 08/09 © 2009 ADC Telecommunications, Inc. All Rights Reserved