

Technical Article

A look at Intelligent Infrastructure Management

by Krzysztof Ojdana, Product Manager, Molex

Introduction

The inherent flexibility of structured cabling - the ability to move users within the system, or add new users to it easily and cost-effectively - is both a key benefit and a management challenge. Keeping cabling documentation up to date is a headache many network managers could do without.

Now, new Intelligent Infrastructure Management (IIM) systems are appearing on the market which monitor networks in real time, bringing significant management advantages and cost benefits.

Network documentation

In a smaller organisation the patching records or cross-connect log is often held on tabulated paper sheets. This is a simple and effective for small numbers of ports which are reconfigured only occasionally. In a bigger organisations with up to about 1000 points a spreadsheet is usually used. For a large system, specialist databases are used to document the connection pattern from voice or data host equipment through the patching frames in the telecommunications room and thereafter out to the work area cabling.

However much these systems vary in size and complexity they all have one thing in common; they are as good, or as bad, as the information they hold. They all need to be updated manually and the upkeep is therefore sometimes overlooked in the bustle of everyday business. The data held in these systems ranges from very nearly accurate to badly out of date.

In organisations where the churn rate is high it can be difficult to keep the documentation up to date. As a result, the network manager is faced with the time-consuming task of auditing moves, adds and changes (MAC's) prior to their implementation. This affects the cost of each move radically. It is not uncommon for network managers to be so daunted by the time and cost involved in moves, adds and changes that they sub-contract the whole process to their cabling system installer. This is often supplemented by a periodic network audit to establish the entire communications infrastructure connection pattern, at further cost.

If such an audit is not carried out regularly, it is not uncommon to find that patch leads have been left connected to hub or switch ports even though they have no ongoing connection to the work area. This can lead to the erroneous impression that the hub or switch in question has reached full capacity and that the network is in need of additional active equipment. It has been estimated that in some industry segments this level of 'ghost utilisation' of network equipment can be as high as 40 percent.

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Tracing faults

Without an easily readable and accurate record of patching connections, fault tracing in the event of a network outage can be difficult and time consuming. The inadvertent disconnection of a server or important wide area link could have a network segment or even the whole network down for as long as the mistake takes to correct. It is not easy to estimate the cost of this downtime accurately, but most network managers recognise this as a problem they have had to deal with at some point in their career.

Intelligent Infrastructure Management (IIM)

Now, network managers are starting to address these issues by using a combination of connectivity hardware and software which monitor the system in real time. Connection information is fed back to a cabling management software package which automatically updates the records held in its database.

A good Intelligent Infrastructure Management system deals with these issues and more; the horizontal patch panels, voice host ports and hubs or switch connections within the system can be monitored and any change in connection status is reported to the database. This removes the possibility of the database information lagging behind reality.

The ability to detect the presence of a connector in a given port also means that moves, adds and changes (MAC's) can be guided electronically. The network manager creates a work order to disconnect a user from one location and repatch them to another, giving the port identifiers to the technician in real time. This can be presented via a remote interface on a terminal within the communications room or to a hand-held device with an IP connection. The technician can then effect the changes and ask the database to confirm that they are correct before committing them to the database. The database can report any connections that are incorrect and the technician can correct them immediately. Because the network manager can be confident of the accuracy of the records, there is no need to pre-audit the process.

There are other advantages delivered by the ability to detect the insertion or removal of a connector. Unauthorised connections or disconnections (those not related to a work order) can be reported to the network manager within seconds of them happening by automated 'event manager' routines within the software. This can be by a simple network level message, e-mail or even an SMS message. With a network camera positioned near the patching frames a photograph of the culprit can be attached to the e-mail alert or logged for later investigation.

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Networking equipment ports are monitored so the database can report those ports that are connected to a user and those which are unused. The software can be linked to network management packages so the connection at the physical layer can be compared to the connection pattern at the layers above.

Conclusion

The addition of intelligence to structured cabling turns it from a flexible network to a powerful controlled infrastructure and, whilst not every end user will need this level of control, there are those for whom downtime, churn, security or network audit costs are significant. An Intelligent Infrastructure Management System with real time feedback can make a significant reduction in the cost of ownership of communications cabling.

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