

3M Telecommunications  
Solutions for Networks



# 3M™ Volition™

Intelligent Management System



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There is now increasing interest in real-time monitoring of connectivity in data centres and premises networks to ensure accuracy of documentation, to minimise planning, installation and maintenance time and to ensure maximum availability of the network.

So it is no surprise that many organisations are looking at taking their existing local area network cabling systems to a new level that will last for years to come.

This is why it is vital to make the right choice of product and to work with a partner that has the experience and expertise to support you every step of the way. Whether a system owner, an installer, consultant or systems integrator, 3M is your ideal solutions provider for intelligent management systems, with a system that will perform in even the most demanding of 'mission-critical' situations. Marketed under the Volition brand name, all 3M cabling solutions are backed by a flexible range of consultancy and project support services.

## **A proven track record you can trust**

3M has a track record that is hard to rival, spanning over 40 years of network design and product innovation. 3M has installed high-calibre cabling solutions across the world, for many of the biggest global organisations and in some of the most demanding situations imaginable. Employing some of the best experts in the industry, 3M has for many years worked closely with the industry associations tasked with creating international cabling standards.

## **Global knowledge, local expertise**

The company is renowned for its commitment to research and development, so customers and partners can always be sure that 3M is at the leading edge of innovation, as well as the assurance that 3M has a strong focus on environmental issues and adhering to relevant legislation. Established as one of Europe's leading providers of cabling systems, 3M also understands market needs on a local level, with offices in over 80 countries worldwide.

## **Service & support**

Excellent technology is critical, but customer and channel partner service is equally important, from pre-installation onwards. That's why 3M provides a broad range of support options for every stage of a system's life, including network design and project support, on-site assistance, certified installer training and advice on systems upgrades. A 25-year warranty\* is offered for the passive cabling system and 3M has built a robust supply chain, trusted distributors and customer service teams.



### Why Intelligent Management Systems?

As businesses become increasingly reliant on their IT systems and 100% network availability is demanded it is critical that records of the network configuration are also completely reliable and up to date. This allows the fastest possible reaction to day-to-day changes and unexpected incidents.

3M Volition Intelligent Management System (VIMS) works by providing a non-intrusive overlay system on the main patching frame that can be continuously monitored to give real-time visibility and control of the connections, and that can be managed from any location with internet access. These monitored locations and data from assets in both the active and static parts of the network are combined into a trusted, accurate configuration database that forms the basis of the control that an intelligent management system can bring.

Using the database and the intelligent management system can simplify infrastructure administration, optimise the service support, enable automated planning, deployment and provisioning, maximise asset utilisation and minimise downtime. Because information is readily available reporting is made easier, and because of the real-time monitoring and the network mapping security can be improved.

Volition Intelligent Management System is an infrastructure management solution delivering quality, reliability and ease of installation and use no matter how large or complex the project is.

### Range overview

3M provides a single point of call for intelligent cabling system with a comprehensive range of passive cabling components including copper jacks, fibre connectors and copper and fibre cables that integrate with the range of managed products such as panels, management hardware and software.



### Data Centres

Data centre management in today's dynamic environment is complex and requires an integrated answer to numerous challenges. The top priority of data centre staff is to provide continuous, high-quality performance, and to assure the security of data and equipment. At the same time, they must also minimise expenditure and optimise the use of limited and costly resources including space, power, cooling and connectivity.

### Commercial Buildings

Different workspace environments share similar needs: uninterrupted service, quick and flexible provisioning, efficient asset management, effective fault management and robust performance.

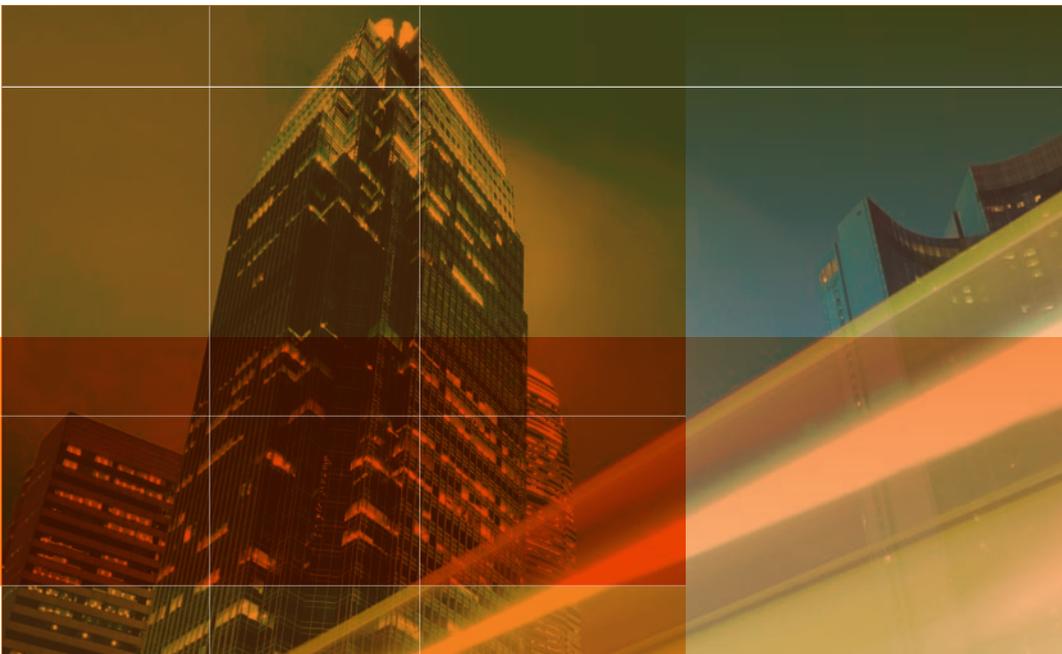
Designed with these challenges in mind, VIMS is a comprehensive infrastructure management solution serving the organisation at every stage of the operation – from planning through installation and implementation and on to network maintenance and monitoring.

### Features of the Volition Intelligent Management System include:

#### Real-time monitoring and recording of connectivity

Accurate documentation of the physical network is a must for those who wish to have complete control. VIMS continuous automatic monitoring ensures that the cabling documentation is up to date. Beyond the cabling, the system documents infrastructure elements such as racks, cabinets, power and environmental monitoring systems, etc., to deliver an accurate, comprehensive picture of the complete network. This aids compliance with challenging legislation, standards and directives by automatically documenting all network connectivity changes.

VIMS offers a solution for automating most steps of the database-building process, and for automatically maintaining the integrity of database documentation – all the way from the jack/connector level through vertical and horizontal cables, switch ports, trunking and cabling pathways.



### Real-time automated IT asset management

VIMS Discovery Module automates the task of discovering IT equipment (such as PCs, IP phones, switches and servers) and their geographical placement, eliminating the human error associated with this time-consuming process. Then, to keep the IT equipment information up to date, the system carries out periodic network scans and ongoing monitoring of switch traps, and uses the information collected to update its records. VIMS's intelligent management capabilities make it easy for users to keep track of the physical location and movements of high-value assets throughout the enterprise and organises detailed information regarding each device in the network, including types and quantities of equipment, asset status, inter-connectivity and interaction and the relationships and dependencies between the devices.

### Fault management

VIMS continuously monitors connectivity at the patching level and provides an immediate alert when it senses any faults or disconnects, eliminating frustrating searches by giving the exact location of the fault in real time.

### Moves, Adds and Changes (MACs)

MAC execution requires accurate information from many fronts: service availability; infrastructure readiness; VLANs; resiliency patterns; and more. VIMS's Automated Provisioning Tool uses sophisticated algorithms to make sense of all these elements, resulting in a streamlined and automated MAC planning and implementation process.

### Security

VIMS provides a comprehensive set of security tools designed to help the organisation succeed in its ongoing fight against suspect activity. VIMS's security tools include real-time identification of illegal or unscheduled connects/disconnects, identification of unauthorised devices, and more.

### Real-time power management and capacity monitoring for data centres

VIMS offers a powerful, real-time management tool, which continuously monitors power consumption, identifies and helps flatten power peaks, identifies power-hogging devices, provides policy-based power planning across cabinets, and assists in determining future power consumption.

By keeping track of all equipment and services, VIMS makes it easy to trace 'stranded capacities' such as power, space, cooling, switch ports, etc., avoid excessive capital and operational spending, and make more effective procurement decisions. VIMS can monitor the capacity and utilisation of every IT infrastructure asset, from power components through use of space, to quantities and locations of servers and network equipment.

## Cabling Components

### Copper Cabling

#### RJ45 Copper Patch Panels

Modular 19" keystone patch panels which, when used in conjunction with Volition Intelligent Management System, can scan the wiring configuration and report the connectivity status. Patching information is displayed on the management station for cabling management and control. LED indicators on the panels can identify any two ports patched together. The panels have a modular design which can accommodate up to 24 unshielded or shielded keystone-type 3M jacks in one height unit. The panels offer simple assembly and installation as jacks are terminated separately and then mounted onto the panel. The STP option includes a proper grounding facility.

#### Copper Patch Cords

VIMS copper patchcords are used in cross-connect Volition Intelligent Management System applications. They comprise a length of nine-wire flexible jumper cable, terminated with RJ45 plugs at each end, with external ninth wire contacts to facilitate the intelligent patching. The plugs have flexible boots for enhanced life and reliability and an anti-sag latch design. They are 100% tested at the factory.

### Fibre Cabling

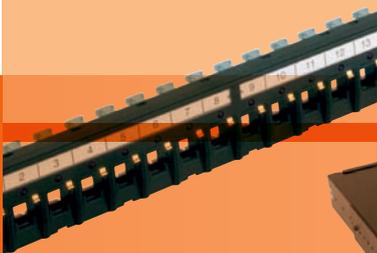
#### LC Fibre Patch Panels

19" LC connector patch panels which, when used in conjunction with Volition Intelligent Management System, can scan the wiring configuration and report the connectivity status. Patching information is displayed on the management station for cabling management and control. LED indicators on the panels can identify any two ports patched together. The high-density panels support 24 duplex LC adapters (48 fibres) in one height unit of rack space and have multimode or singlemode adapters already fitted. Panels with MPO cable entry have wiring looms already fitted. For standard panels a sliding drawer enables ease of access to the stored fibre and gives a large work area for comfortable installation. A wide range of fibre optic cabling management accessories, including fibre management clips, splice cassettes, cable grounding kits and cable entry glands are available. Configurable rack mounting brackets allow for recessed panel mounting, enhancing cable protection.

#### LC Fibre Patch Cords

VIMS LC patch cords are designed for Volition Intelligent Management System applications. They comprise two tight buffer fibres and an additional 28 AWG copper wire housed within a minizip triamase construction cable. VIMS patch cords are available with three fibre types – multimode 50/125 OM3, multimode 62.5/125 OM1 and single mode 9/125. Multimode cables are coloured ivory with aqua-toned connectors for the OM3 cable and single mode cables are coloured blue. Each end is terminated with a high-performance duplex LC connector and a spring-loaded electrical contact housed within a common plastic shell.

RJ45 Copper Patch Panels



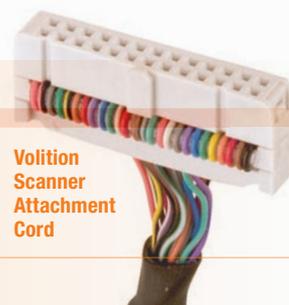
LC Fibre Patch Panels



Volition Master



Volition Scanner Attachment Cord



## Hardware Components

### Volition Master

The Volition Master is the apex of the hierarchy and has the ability to view the entire system. The Master controls all underlying Scanners that manage the scanning algorithm.

The Volition Master includes an SNMP agent that allows the management software to receive all relevant data. It collects, saves, and transmits connectivity data from the Volition Scanners via the Volition Expanders and updates the management station. The Master can monitor up to four communication rooms in its own right through four Down Link ports, each of which represents a site.

### Volition Expander

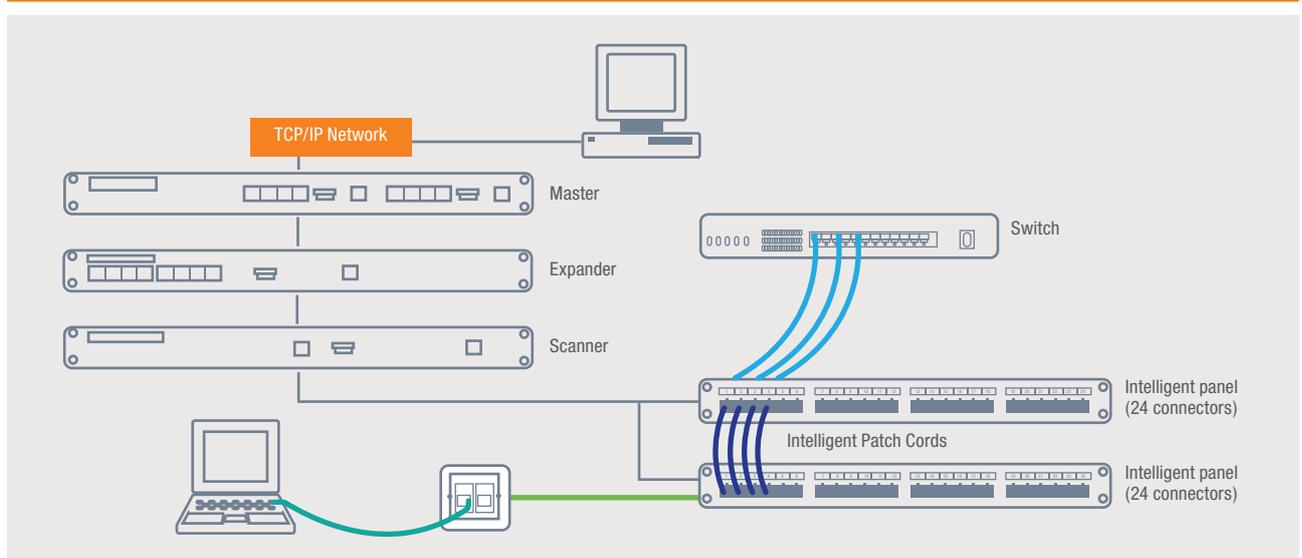
The Volition Expander is used to expand the capabilities of the Volition Master. This is achieved by cascading Expanders from the Down Link ports of the Master. Each Down Link port of a Master is connected to a Level 1 Expander at a site. Many levels of Expanders can be cascaded from the Down Link ports of upper level Expanders. Each Level 1 Expander can be located in a separate site.

The Expander allows all devices connected to its Down Link ports to communicate with all devices on its Up Link port. The Expanders are the link between the Volition Scanners and the Master, thereby allowing the Master to communicate with all the Scanners in the system.

### Volition Master Expander

The VIMS Master Expander is a combination of a VIMS Master and a VIMS Expander. It is used for single sites and replaces the Master for that site. The VIMS Master Expander may be connected through the Down Link ports to both VIMS Scanners and VIMS Expanders, depending on the site configuration.

**Diagram 1:** System diagram



### Volition Scanner and Mini Scanner

The Volition Scanners are connected to the Volition Intelligent Patch Panels with Scanner Attachment Cords. A Scanner monitors the ports on 24 panels and a Mini Scanner monitors 12 panels. In addition to the core scanning functionality, the Scanner acts as the mediator between the Volition Control Pad, used to control system processes, and the Master. Scanners are mounted in the communications centre racks at various sites, such as different floors of a building or in other nearby buildings.

### Volition Scanner Attachment Cords

A Scanner Attachment Cord connects a Scanner to two panels. They come in a range of lengths to facilitate easy positioning of the Scanners in a rack.

### Volition Control Pad

A Control Pad may be connected to any Scanner, both controlling the specific Scanner locally, and sending/receiving instructions to/from the Master via the Expander.

Using the Control Pad the technician is guided through the process of connecting and disconnecting the cords to complete the links defined in the system. By activating one of the three functions of the Control Pad, the technician is guided through different processes by the LEDs on the ports of the panels. The LED will either stay lit or blink depending on the activity being performed or required.

### Volition Intelligent Management Software

Volition Intelligent Management Software manages Volition hardware, monitors the health of all the cabling components and also collects network data using its own discovery mechanism as well as data from external applications.

Volition Intelligent Management Software can be deployed in centralised or distributed configurations and can manage sites locally and remotely.

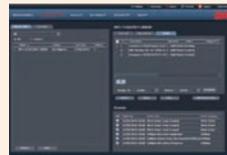
## Management Software



VIMS is a client/server application which employs a SQL database. Using SNMP with the network of VIMS hardware and active patching components, VIMS controls, maps and monitors the physical layer and active LAN equipment.



Once the database is established it is then simple to make the daily management of the installed network through a series of screen. Racks and individual components can be viewed and connectivity checked in real time.



It is easy to create work orders to make moves, adds and changes. These are sent to the correct Scanner where the technician can 'follow the lights'. Once the changes are made the system checks they are accurate and the database is instantly updated.



The CAD system includes a facility to map the network on drawings of the building layout allowing an 'at a glance' view down to outlet level.

Using this 100% accurate data, it builds and maintains a database, a trusted source of information on all network components and their connectivity to other network components.

It immediately identifies disconnected devices and users, enabling proactive network troubleshooting and reducing mean-time-to-repair (MTTR).

Building on this accurate data, Volition IMS automates and accelerates a broad variety of previously manual tasks, including automated provisioning, work order planning and execution, reporting capabilities, production and management, guided moves, adds and changes (MAC) and maintenance forensics, web-based configuration, connection troubleshooting, security monitoring, utilisation optimisation and others.

The VIMS software comes in four different packages:

#### **VIMS Core**

Mainly used for cabling documentation. Contains VIMS Software plus Report Centre for one user.

#### **VIMS Standard**

The core package plus the ability to detect and monitor network equipment. Contains VIMS Software plus Discovery and Report Centre for one user.

#### **VIMS Advanced**

Leverages the system's capability in provisioning and utilises the system's potential to the fullest extent, not only at the maintenance stage of the network, but also during planning and implementation.

Contains VIMS Software plus Discovery, Report Centre for one user, Provisioning Module, Site Pro for one user and CAD module.

#### **VIMS Plus**

Gives the fullest range of capabilities. Particularly recommended for sites with multiple users and a broad set of functionality requirements. Contains VIMS Software plus Discovery, Report Centre for five users, Provisioning Module, Site Pro for five users, CAD module, Site Builder and Dashboard for five users.

#### **Volition Dashboard**

It continuously monitors the management system and all active network devices, including patch panels, switches, servers, PCs, phones and printers.

#### **Volition Report Centre**

It provides a broad range of out-of-the-box reports, as well as a powerful reporting engine for creating customised reports. All reports can be exported to a multitude of formats and/or scheduled for automatic distribution.

#### **Volition Site Builder**

It is an effective tool for mass import of asset and connectivity data from existing Microsoft Excel tables. It enables the user to create work orders while harnessing the input speed of Microsoft Excel.

#### **Volition Site Pro**

It is an advanced handheld application. It extends powerful management capabilities onto the network floor, whether in the data centre, communication room, workspace or at a remote location.

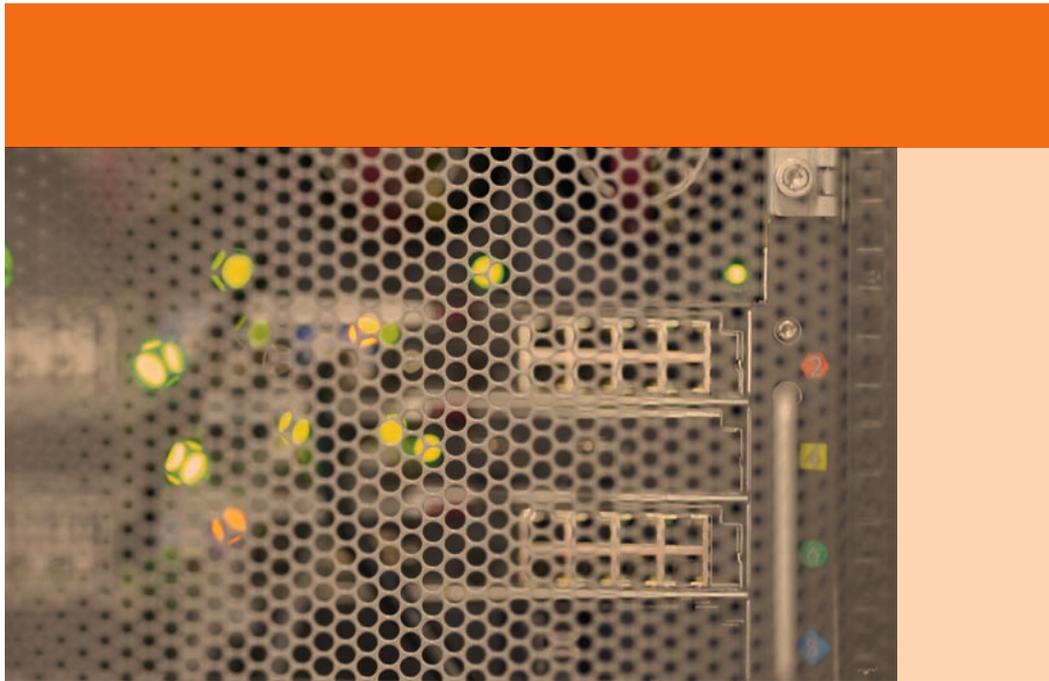
#### **Volition SDK**

SDK (Software Development Kit) enables Volition Intelligent Management Software capabilities to be used with any external application or system in the organisation's network. As an open-platform system, Volition Intelligent Management Software integrates seamlessly with the full range of help desk, network management and asset management tools. SDK uses common interface technologies, such as web services and DLLs.

# Product list, part numbers

<b>VIMS Hardware</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-101	VIMS Master
VOL-IMS-102	VIMS Master Expander
VOL-IMS-103	VIMS Expander
VOL-IMS-104	VIMS Scanner
VOL-IMS-105	VIMS Mini Scanner
VOL-IMS-106	VIMS Security Controller
VOL-IMS-107	VIMS Indicator Controller
VOL-IMS-108	VIMS Local Scanner
VOL-IMS-109	VIMS Rack Indicator
VOL-IMS-110	VIMS Control Pad
<b>Scanner Attachment Cords</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-201	VIMS Scanner Attachment Cord, 1.5m
VOL-IMS-202	VIMS Scanner Attachment Cord, 2.5m
VOL-IMS-203	VIMS Scanner Attachment Cord, 4.0m
VOL-IMS-204	VIMS Scanner Attachment Cord, 6.0m
VOL-IMS-205	VIMS Scanner Attachment Cord, 12.0m
<b>Copper Keystone Panels</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-301	VIMS Keystone Panel, UTP, 24 Ports
VOL-IMS-302	VIMS Keystone Panel, STP, 24 Ports
<b>Category 6 Copper Patch Cords</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-310	VIMS Category 6 UTP Patchcord, LSOH, 1.0m
VOL-IMS-311	VIMS Category 6 UTP Patchcord, LSOH, 2.0m
VOL-IMS-312	VIMS Category 6 UTP Patchcord, LSOH, 3.0m
VOL-IMS-313	VIMS Category 6 UTP Patchcord, LSOH, 5.0m
VOL-IMS-314	VIMS Category 6 STP Patchcord, LSOH, 1.0m
VOL-IMS-315	VIMS Category 6 STP Patchcord, LSOH, 2.0m
VOL-IMS-316	VIMS Category 6 STP Patchcord, LSOH, 3.0m
VOL-IMS-317	VIMS Category 6 STP Patchcord, LSOH, 5.0m
<b>Category 6A Copper Patch Cords</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-321	VIMS Category 6A STP Patchcord, LSOH, 2.0m
VOL-IMS-322	VIMS Category 6A STP Patchcord, LSOH, 3.0m
VOL-IMS-323	VIMS Category 6A STP Patchcord, LSOH, 5.0m
<b>LC Fibre Panels</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-401	VIMS Fibre Optic Panel, 48, LC, MM,
VOL-IMS-402	VIMS Fibre Optic Panel, 48, LC, SM, PC,
VOL-IMS-403	VIMS LC MPO 48,MM,OM3

<b>Fibre Accessories</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-501	Cable Routing Ring Kit (up to 48 fibres)
VOL-IMS-502	F/O Cable Ground Kit
VOL-IMS-503	Cable Entry Panel Kit
VOL-IMS-504	Cable Entry Gland
VOL-IMS-505	Fibre Management Clip
<b>LC Fibre Patch Cords</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-410	VIMS Optical Fibre Patch Cord, LC, SM, PC, 1m
VOL-IMS-411	VIMS Optical Fibre Patch Cord, LC, SM, PC, 2m
VOL-IMS-412	VIMS Optical Fibre Patch Cord, LC, SM, PC, 3m
VOL-IMS-413	VIMS Optical Fibre Patch Cord, LC, SM, PC, 5m
VOL-IMS-414	VIMS Optical Fibre Patch Cord, LC, MM50, OM3, 1m
VOL-IMS-415	VIMS Optical Fibre Patch Cord, LC, MM50, OM3, 2m
VOL-IMS-416	VIMS Optical Fibre Patch Cord, LC, MM50, OM3, 3m
VOL-IMS-417	VIMS Optical Fibre Patch Cord, LC, MM50, OM3, 5m
VOL-IMS-418	VIMS Optical Fibre Patch Cord, LC, MM62.5, 1m
VOL-IMS-419	VIMS Optical Fibre Patch Cord, LC, MM62.5, 2m
VOL-IMS-420	VIMS Optical Fibre Patch Cord, LC, MM62.5, 3m
VOL-IMS-421	VIMS Optical Fibre Patch Cord, LC, MM62.5, 5m
<b>VIMS Software</b>	
<b>3M Reference</b>	<b>Description</b>
VOL-IMS-601	VIMS Software Core
VOL-IMS-602	VIMS Software Standard
VOL-IMS-603	VIMS Software Advanced
VOL-IMS-604	VIMS Software Plus
VOL-IMS-605	VIMS Software Discovery Module
VOL-IMS-606	VIMS Software Provisioning Module
VOL-IMS-607	VIMS Software PBX Module
VOL-IMS-608	VIMS Software Cable Test Results Module
VOL-IMS-609	VIMS Software SDK Runtime
VOL-IMS-610	VIMS Software Core Additional Online Ports
VOL-IMS-611	VIMS Software Standard Additional Online Ports
VOL-IMS-612	VIMS Software Advanced Additional Online Ports
VOL-IMS-613	VIMS Software Plus Additional Online Ports
VOL-IMS-614	VIMS Report Center – Additional User
VOL-IMS-615	VIMS SiteBuilder Inventory Editor Module
VOL-IMS-616	VIMS SiteBuilder Links & Work Order Editor Module
VOL-IMS-618	VIMS Dashboard 2.2 – User
VOL-IMS-619	VIMS SitePro 1.4 – User
VOL-IMS-620	VIMS CAD Module License
VOL-IMS-621	VIMS SDK Developer



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