3M™ Data Center Solutions

# Innovation
## is the
# Solution

**3M**

**Biometric Physical Security**
Multi-factor biometric access control reader for data center physical security needs.

**Air Filtration**
Filters help provide energy savings and indoor air quality improvements for general HVAC system and CRAC units.

**Medium Voltage Power**
Products used to terminate and splice medium voltage power within the data center.
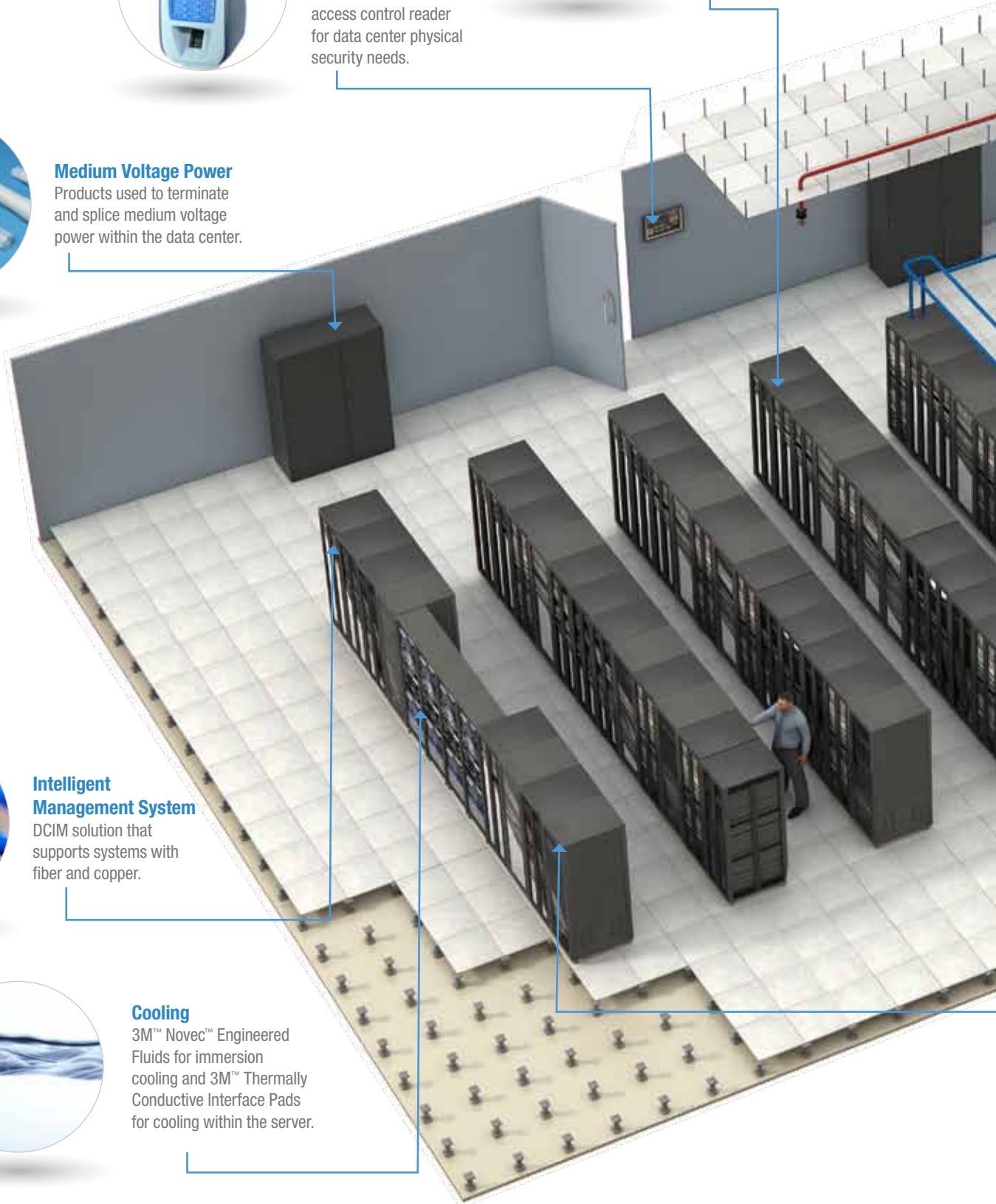
**Intelligent Management System**
DCIM solution that supports systems with fiber and copper.

**Cooling**
3M™ Novec™ Engineered Fluids for immersion cooling and 3M™ Thermally Conductive Interface Pads for cooling within the server.

www.3M.com/datacenters

## Fire Protection

3M™ Novec™ Fire Protection Fluid 1230 quickly and safely helps extinguish fires. Other fire protection products from 3M help suppress the spread of fire and noxious gases.

## Automated Fiber Management

AFM provides fully automated and managed fiber infrastructure.

## Infrastructure

Broad range of products including medium voltage accessories, static control systems, and raised flooring.

## Copper Structured Cabling

Copper structured cabling products, including patch panels, jacks, and patch cords.

## High-Speed Connectivity

3M™ Twin Axial Cable and 3M™ Active Optical Cable (AOC) are innovative, high-speed cabling solutions that enable density without sacrificing performance.

## Fiber Structured Cabling

Fiber structured cabling solutions include innovative, field-install fiber connectors, fiber patch cords and cables, MPO components, and fiber patch panels.

# 3M™ Data Center Solutions

Data centers are about more than data. That's why 3M Data Center solutions are designed to increase efficiency and reduce energy. To maximize performance and minimize costs. We harness the power of more than 45 technologies and more than 50 years of network experience to provide customer-centric innovations, worldwide, that are fast, safe, sustainable, and secure. Because the future belongs to those who invent it. 3M.

## 3M Products and Technologies Address Top Data Center Concerns

| | Ease of Expanding Offering Efficiently | Minimize OpEx | Standardization of Systems | Power Efficiency | Remote Management | Green ICT and Sustainability | Quality of Service | Security | Protection of Assets | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| High-Speed Connectivity | | ● | ● | ● | | ● | ● | | | ● |
| Fiber Structured Cabling | ● | ● | ● | ● | | ● | ● | | | ● |
| Fiber Connectors | ● | ● | ● | | | | ● | | | ● |
| Copper Structured Cabling | ● | ● | ● | ● | | ● | ● | | | ● |
| Automated Fiber Management | ● | ● | | | ● | | ● | | ● | ● |
| Intelligent Infrastructure Mgmt | ● | ● | ● | | ● | | ● | | | ● |
| Biometric Access | | | | | | | | ● | ● | ● |
| Fire Protection Fluid | | ● | ● | | | ● | ● | ● | ● | ● |
| Convection / Conduction Cooling | | ● | | ● | | ● | | | | ● |
| Medium Voltage Products | | | | ● | | | ● | | ● | ● |
| Static Control Systems | | ● | | | ● | | ● | | ● | ● |
| Immersion Cooling (in development) | | ● | | ● | | ● | | | | ● |
| Air Filtration | | ● | | ● | | ● | | | | ● |

## Innovation Technology for a Changing World

For generations, people have looked to 3M for products and ideas to solve problems. Data Centers are no different—3M strives to meet the unaddressed needs facing data centers today.
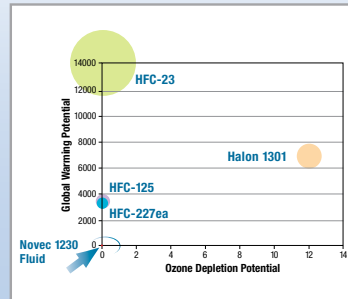
For example, to help address both server cooling and fire protection concerns, 3M is developing a simple, passive, 2-phase (evaporative) cooling technique that involves immersing servers in a bath of 3M™ Novec™ Fluids.

# Sustainability

Over the past 40 years, 3M has actively pursued the development of products that enable our customers to reduce their impact on the environment. The 3M™ Data Center Solutions portfolio supports this commitment.

## 3M™ Novec™ Fluids

Used for fire protection, convection cooling, and an immersion cooling process that is in development, these fluids combine proven performance with an outstanding environmental and safety profile.
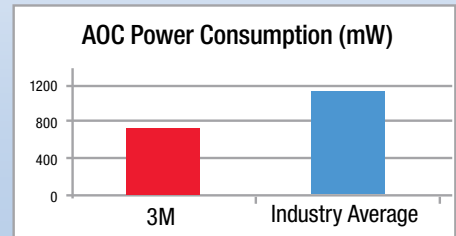


## High-Speed Connectivity Products

With its high-performance, high-speed connectivity products, 3M is helping customers achieve more energy-efficient operations.

**3M™ Active Optical Cable (AOC):** Low-power AOC option offering significant power savings.

**3M™ Twin Axial Cable:** Drives data center efficiency by enabling efficient operations and improving server airflow.
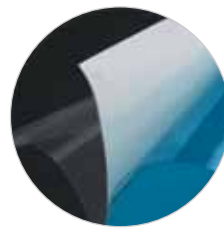


# 3M Data Center Products

## Cooling

Computer Room | OEM Equipment

### 3M™ Novec™ Engineered Fluids
Fluids offering heat transfer efficiency with low environmental impact.

### 3M™ Thermally Conductive Interface Tapes
Tapes providing thermal management and bonding between components.

### 3M™ Thermally Conductive Interface Pads
Acrylic and silicone interface pads providing thermal management between non-contact components.

# High-Speed Connectivity

Switch-to-Server | Top-of-Rack | IntraRack

**3M™ Twin Axial Cable Assembly**
Flat, foldable and longitudinally shielded high-performance cable assembly. InfiniBand certified.

**3M™ Active Optical Cable (AOC) Assembly**
Low-power, low-cost, high-performance active optical cable assembly. InfiniBand certified.

# Fiber Structured Cabling

Carrier Space | Meet-Me-Room | Cages | Computer Room | NOC

**3M™ Crimplok™+ Connectors**
No splice, no gel, no adhesive field-install fiber connectors.

**3M™ No Polish Connectors**
Field-installed fiber connectors with index-matching gel.

**3M™ Hot Melt Connectors**
Fiber connectors offering high reliability and longevity.

**3M™ Volition™ Fiber Cable**
Singlemode (9/125mm); Multimode (OM1, OM2, OM3, OM4).

**3M™ MPO Fiber System Solution**
High-fiber density, pre-terminated connection system.

**3M™ Fiber Distribution System RFO NG**
High-density fiber management system with a modular design.

**3M™ Fiber Distribution Unit 8400 Series**
Flexible, compact fiber distribution system with options for customization.

**3M™ Fiber Patch Cords**
Singlemode and multimode fiber with several connector options.

# Intelligent Connectivity

Carrier Space | Meet-Me-Room | Cages | Computer Room | NOC

### FiberZone Automated Fiber Management
System providing fully automated and managed fiber infrastructure.

### 3M™ Volition™ Intelligent Management Systems
DCIM solution supporting systems with fiber and copper.

# Copper Structured Cabling

Carrier Space | Meet-Me-Room | Cages | Computer Room | NOC

### 3M™ Volition™ Copper Patch Panels
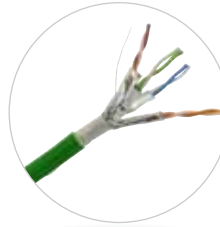Modular-design patch panels accommodating up to 32 RJ45 ports in 1U.

### 3M™ Volition™ RJ45 Jacks
Easy to terminate tool less connectors with superior headroom.

### 3M™ Volition™ Copper Patch Cords
Cat. 6A patch cords designed to minimize alien crosstalk up to 500 MHz.

### 3M™ Volition™ Copper Cables
Shielded Category 6A and 7 cables with excellent EMC/alien crosstalk performance.

# Infrastructure

Computer Room | OEM Equipment

### 3M™ Static Management Program
Continuous monitoring of ground to equipment/chassis, and other essential static controls.

### 3M™ Static Control Flooring/Mats
First line of defense against build-up of static charge.

### 3M™ EMI/EMC Electronic Materials
Transfer tapes, absorber sheets, FFDM, and EMI gaskets.

# Fire Protection

Computer Room | General Facilities

### Novec™ Fire Protection Fluid
Highly-efficient clean agent for data center fire suppression.

### Fire Barrier Products
Passive fire protection to reduce the spread of smoke, fire and noxious gases.

# Medium Voltage Power

General Facilities | Power Generation

### Medium Voltage Products
Cable terminations and splices providing power and connecting equipment.

### Electrical Construction Service
Free project analysis providing take-offs, training and support.

# Biometric Physical Security

General Infrastructure | Cage Access

### MiY-Biometric Access Control
Multi-factor biometric access control reader. Winner of Biometrics, Identification, and Credentialing Award at ISC West in 2011.

# Air Filtration

Computer Room | General Facilities

### Filtrete™ Commercial HVAC Filters
Long-life air filters help provide energy savings with a low pressure drop and improved indoor air quality.

**3M**

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