



Preparando la Infraestructura para las Tendencias Tecnológicas en Educación

Eduardo Luna • 26 de febrero del 2013

connect+evolve

COMMScope

Objetivos de la tecnología

Tendencias tecnológicas

Soluciones diferenciales

Propuesta de Colaboración

Conclusiones

3 Unidades.... ONE COMMSCOPE

COMMSCOPE®



at home

Soluciones Opticas y de RF
para redes **BROADBAND**

POWERED BY

SYSTIMAX®

Soluciones alámbricas e
inalámbricas para redes
ENTERPRISE

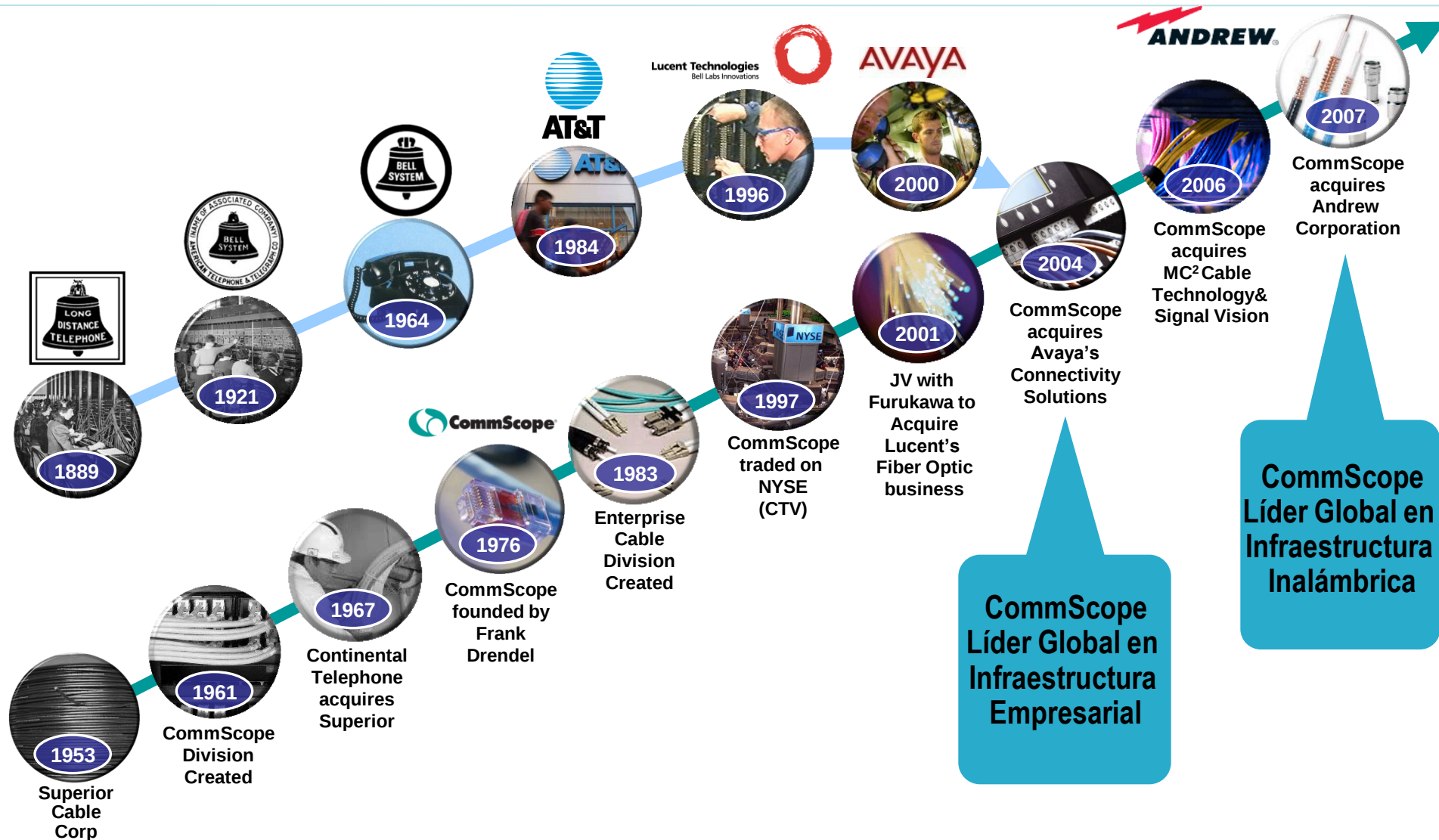
POWERED BY



Soluciones de Radio
frecuencia para redes
WIRELESS

Historia y Trayectoria

COMMSCOPE®

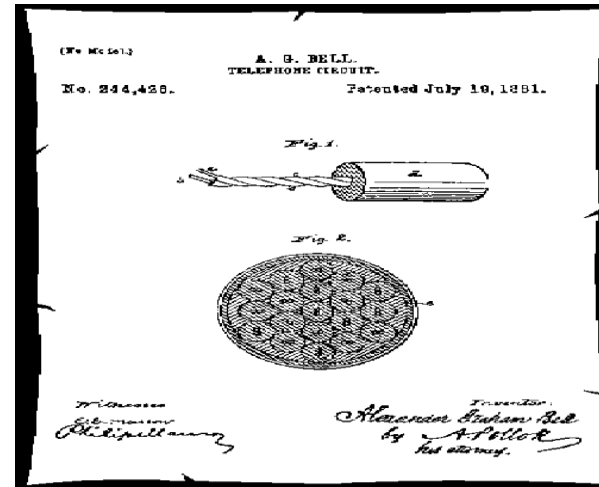




**Alexander
Graham Bell**



Jack Modular



Cable UTP – 4 pares



**Primer Teléfono &
Patente**



Conector de FO LC (Lucent Connector)



Acceso a la información es **crítico** para la experiencia educativa

Deben ayudar a comunicarse en forma **efectiva y segura**

Estudiantes,
Cuerpo docente,
Personal administrativo

Colaboración
más
eficientemente

Mejorar
la **experiencia**
educativa

Lista para
los
próximos
avances

Herramienta de
Aprendizaje



Ambiente: Campus Estudiantil



Oficina central de seguridad
conectando cámaras a
través de todo el campus
con soluciones de coaxial y
fibra óptica

Vigilancia

**Control
Clima**

Storage

Cuartos de Equipamiento /
Telecomunicaciones para
SAN, servidores y
distribución de voz, datos y
video

**Control
Acceso**

Alarmas y
controles de
acceso
conectado a
través de
cables de
control

Intranet

Quiosco en
recepción de
biblioteca
provee
información a
estudiantes vía
soluciones de
par trenzado

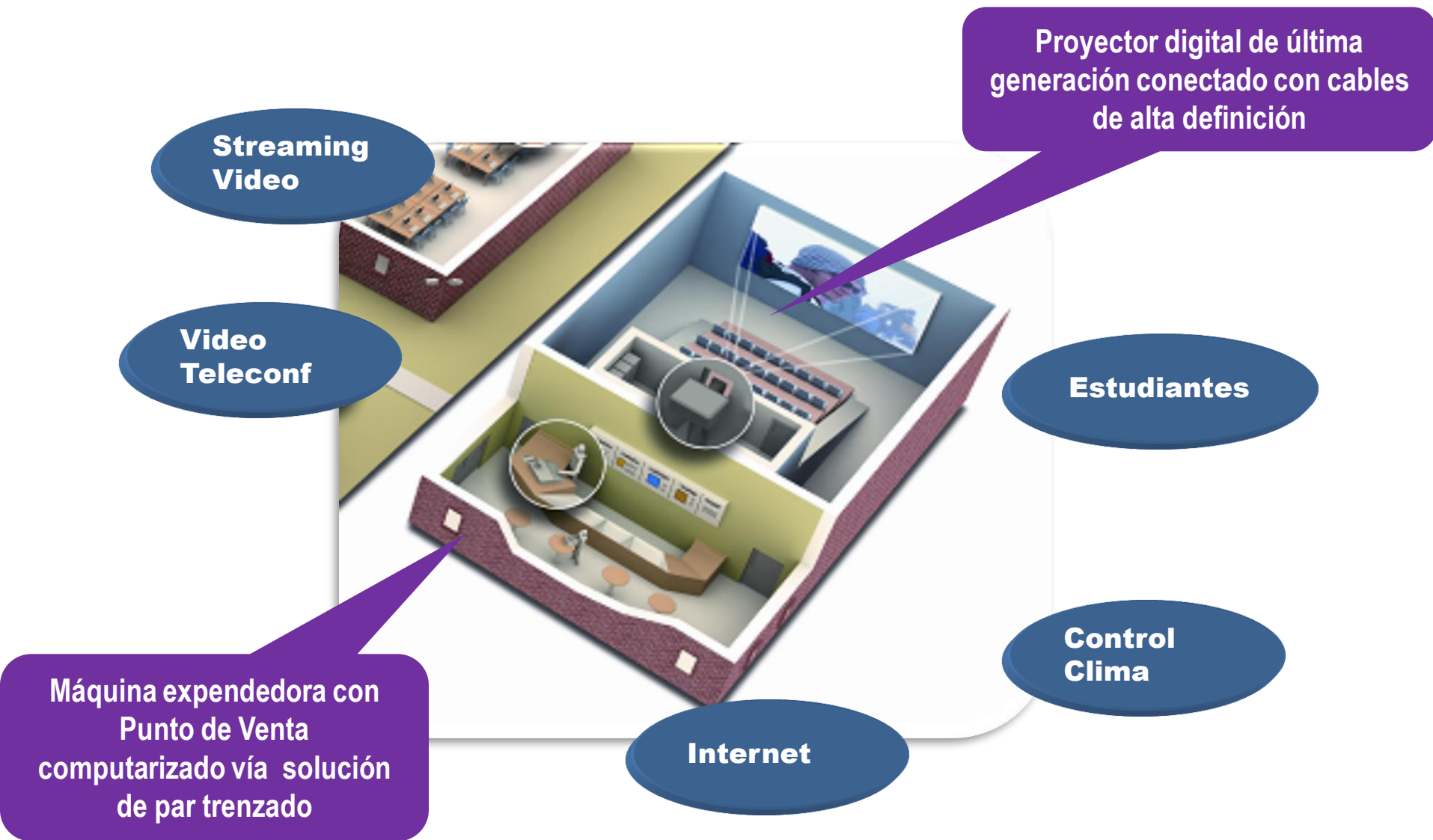
Internet



Áreas Públicas



Salas Multimedia y Salones de Clases



“está progresando en un proyecto para desarrollar un estándar para sistemas de cableado en instalaciones educativas”

TIA standard for educational-facility telecom infrastructure in

Sep 16, 2012

A task group within the Telecommunications Industry Association's (TIA) TR-42.1 Subcommittee on Commercial Building Telecommunications Cabling is progressing on a project to develop a standard for cabling systems in educational facilities.

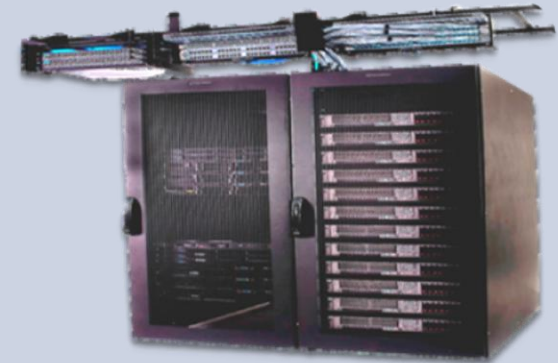
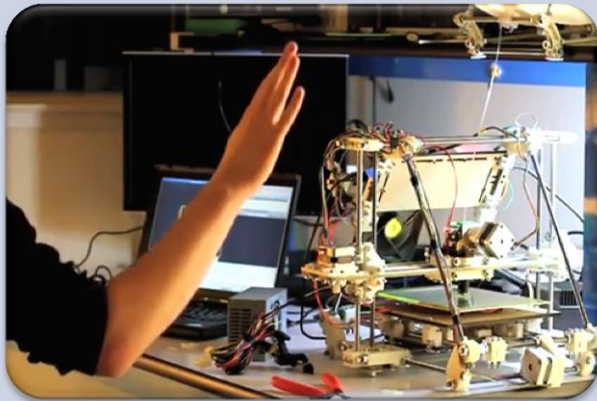
To this point the Educational Facilities Task Group within TR-42.1 has conducted mock ballots on TIA-4966 Telecommunications Infrastructure for Educational Buildings. TR-42.1 meets again the week of October 1-5.

From TIA documentation, it is apparent that distributed antenna systems (DAS) infrastructure is among the topics the task group is tackling. At its most recent meeting, held in [redacted] (official meeting report document available for viewing [here](#)), TR-42.1 took up the issue of establishing a set of [redacted] for DAS. However, the meeting report says the subcommittee "agreed to defer a decision until after further work has been done on DAS in TIA-4966, and further tasked the Educational Facilities Task Group to develop [redacted] foundation for further action regarding a course of action regarding a separate document for DAS."

“infraestructura de sistemas de antenas distribuidas (DAS) es uno de los temas que el grupo de trabajo está considerando”



<http://www.nmc.org/>
<http://educause.edu>



VISIÓN

- **Infraestructura avanzada**
- **Acceso eficaz a la información**
- **Colaboración eficiente**
- Educación a distancia
- **Nuevas tecnologías y herramientas de aprendizaje**

IMPLEMENTADAS CORRECTAMENTE

- Mejoran oportunidades y experiencias de aprendizaje
- **Elevan los estándares de educación**
- **Reducen costos de operación y mantenimiento**
- Mejoran la seguridad

DESAFÍO

- **Infraestructura sin barreras**
- Sencillo de gestionar
- Socios tecnológicos a largo plazo





Wireless	802.11a	802.11b	802.11g	802.11n	802.11ac	802.11ad
Standard Approved	1999	1999	2003	2009	N/A	N/A
Maximum Data Rate (Mbps)	54 (30)	11 (5)	54 (30)	600 (300) 3x3 MIMO @ 40 MHz	1000 (500) 3x3 MIMO	7000 (3500) 8x8 MIMO
Frequency Band (GHz)	5	2.4	2.4	2.4 or 5	5	60
Interference Sources	Cordless phones	Bluetooth, microwave ovens, baby monitors	Bluetooth, microwave ovens, baby monitors	Same as 802.11b/g @ 2.4 GHz Same as 802.11a @ 5 GHz	Same as 802.11a @ 5 GHz	802.15.3c WPAN, Wireless HD

Enterprise Networking News

Cisco to Break the 1-Gigabit Barrier on Enterprise WiFi Networks



- **Independientes** (telefonía, datos, CCTV)
- Lo más económico posible
- Orientadas a personal administrativo
- Uso específico de correos y aplicaciones poco demandantes de ancho de banda
- Mayores costos de operación frente a nuevas herramientas (tiempos, dinero, mantenimiento complejo)
- **Menor requerimiento de almacenamiento de datos**

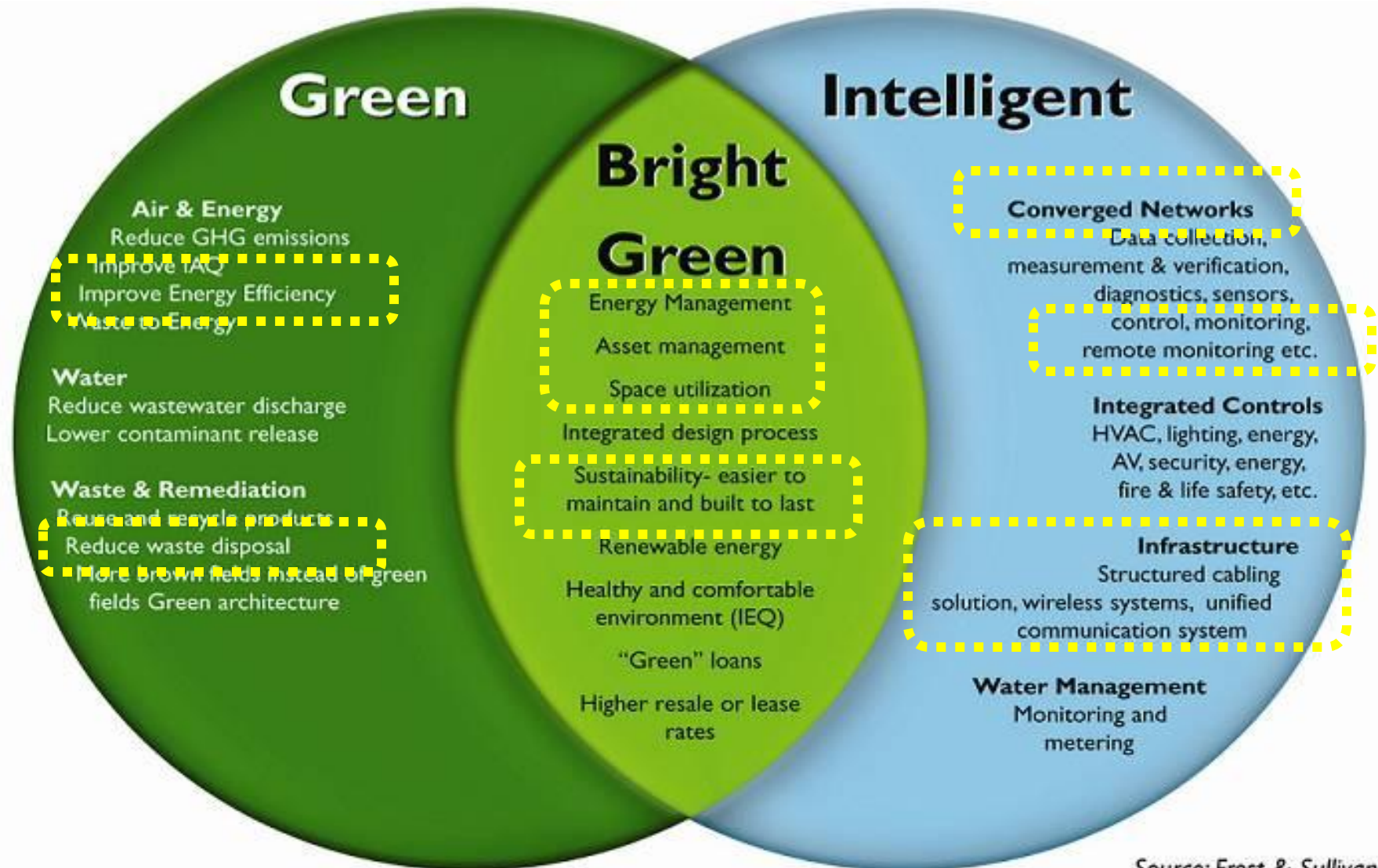
Tradicional



- **Integradas, convergentes**, centralizadas (video IP, streaming, BMS, datos, VoIP, audio IP, seguridad)
- Orientadas a estudiantes y cuerpo docente
- Movilidad
- **Mayor ancho de banda** (contenido multimedia, streaming)
- **Mayor cantidad de conexiones simultáneas**
- **Mayor requerimiento de almacenamiento y/o servicios en la nube**

Nuevo





Source: Frost & Sullivan

LEED no habla de redes o de cableado estructurado...

PERO...

Entrega puntos por reducir productos halogenados

.... por extender los ciclos de vida útil ...

... Y por aumentar la eficiencia energética.



Intent

Reduce the release of persistent bioaccumulative toxic chemicals (PBTs) associated with the life cycle of building materials.

Requirements

- Use materials manufactured without added halogenated organic compounds¹ for at least 75% (by cost) of the material totals in a minimum of three of the following four groups:
- Exterior components (including at a minimum, roof membranes, waterproofing membranes, window and door frames, siding).
- Interior finishes (including at a minimum, flooring, base, ceiling tiles, wall coverings, and window treatments).
- Piping, conduit and electrical boxes.
- Building-installed electrical cable and wire jacketing.

Halogenated organic compounds covered in this credit include the following:

- All plastics containing chlorine or fluorine including:

¹ Halogenated organic compounds (or halocarbons) addressed by this credit are made up of a halogen element (specifically chlorine, bromine or fluorine) and carbon. These compounds are targeted due to their persistence and propensity to dioxin formation. Halogen salts, such as sodium chloride, which are formed with metals instead of carbon have different environmental and health performance characteristics and are not under the purview of this credit.

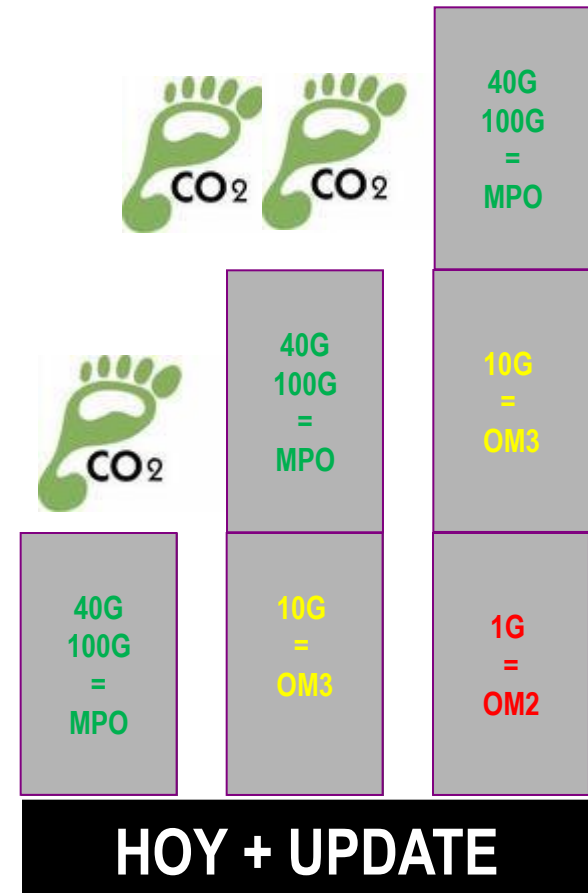
3 generaciones de equipamiento
≈ 15 años

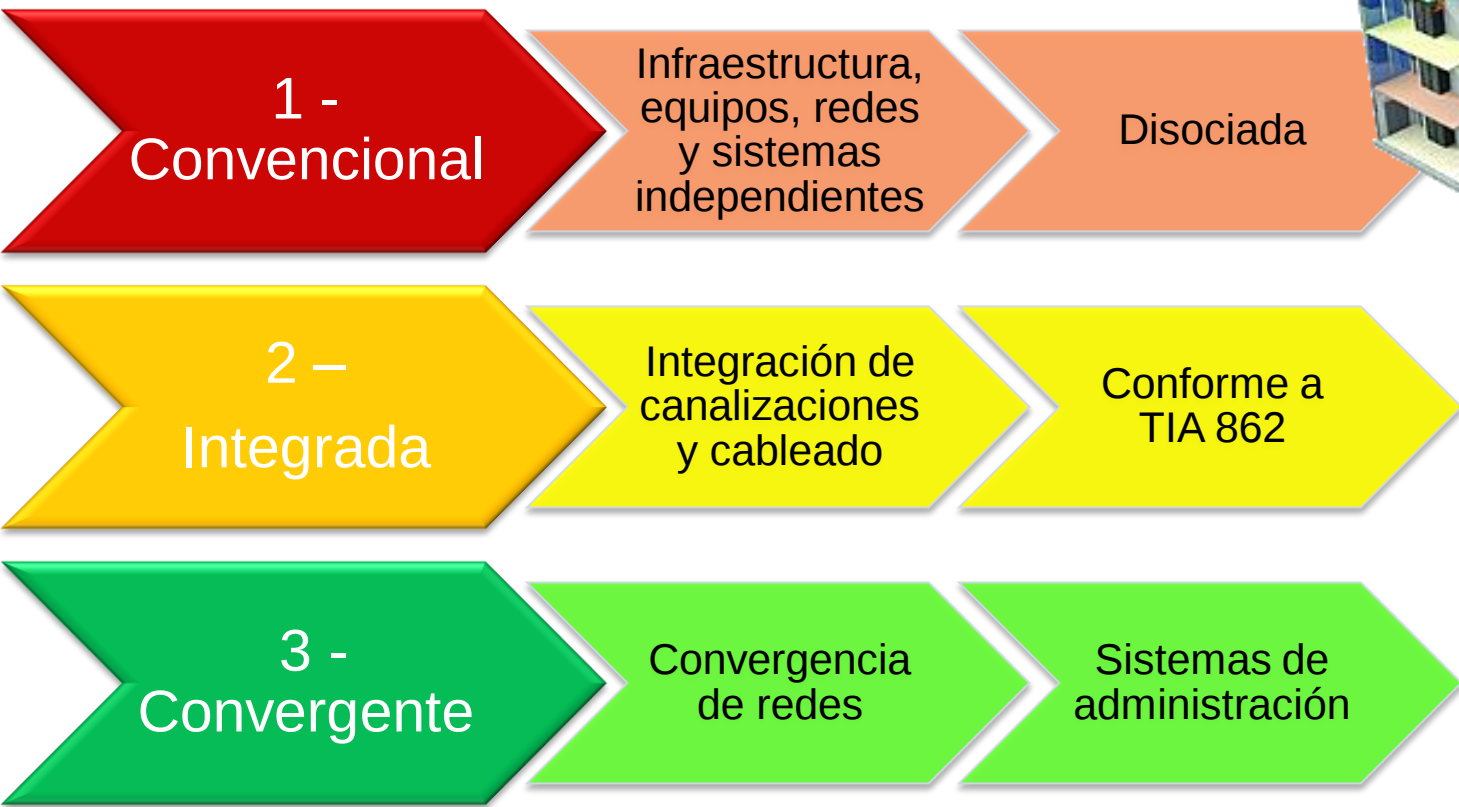
El cableado es menos del 5% del costo total de operaciones de TI a largo plazo

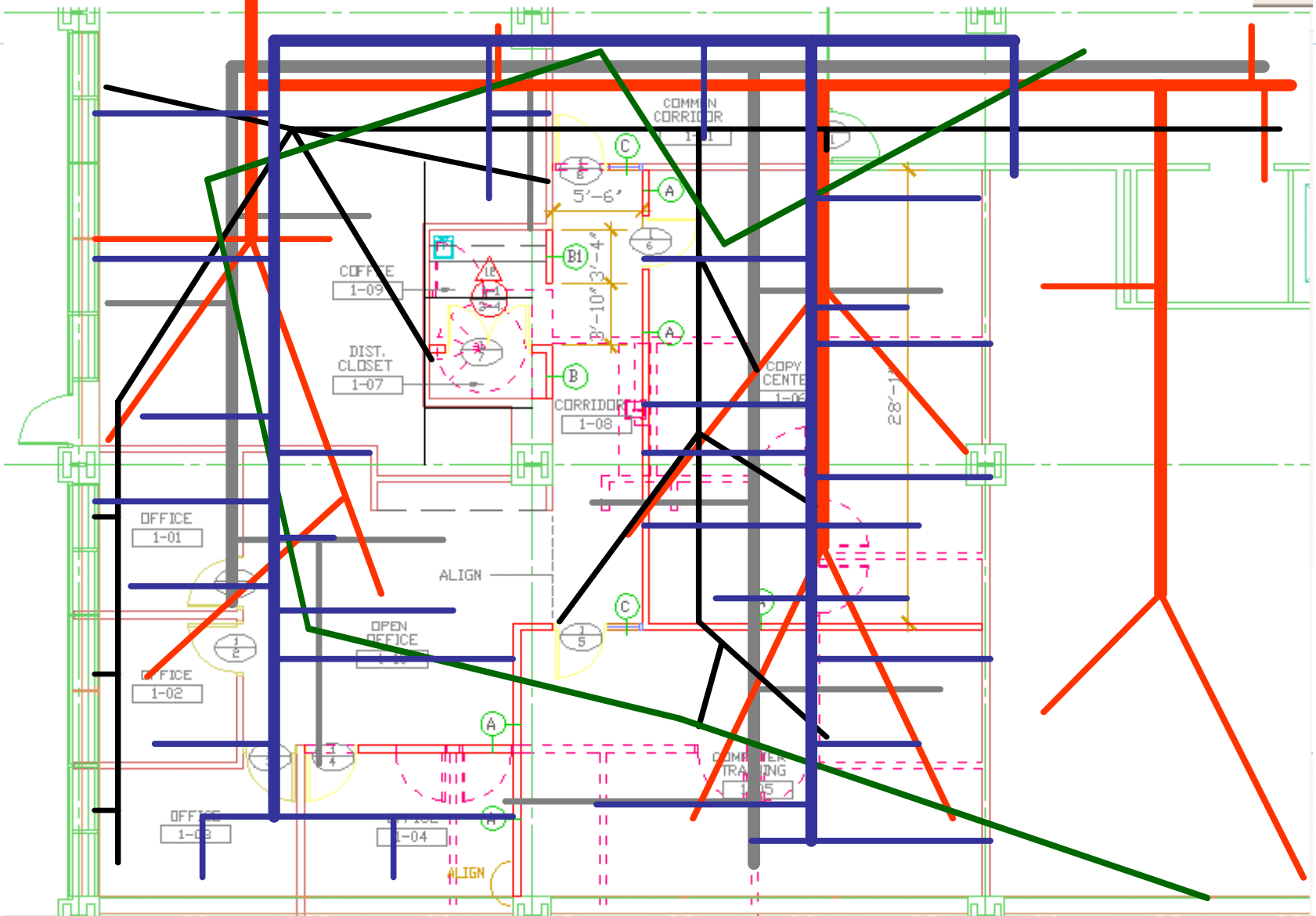
Mayor Vida Útil
=
Menor Recambio
=
Menor Impacto

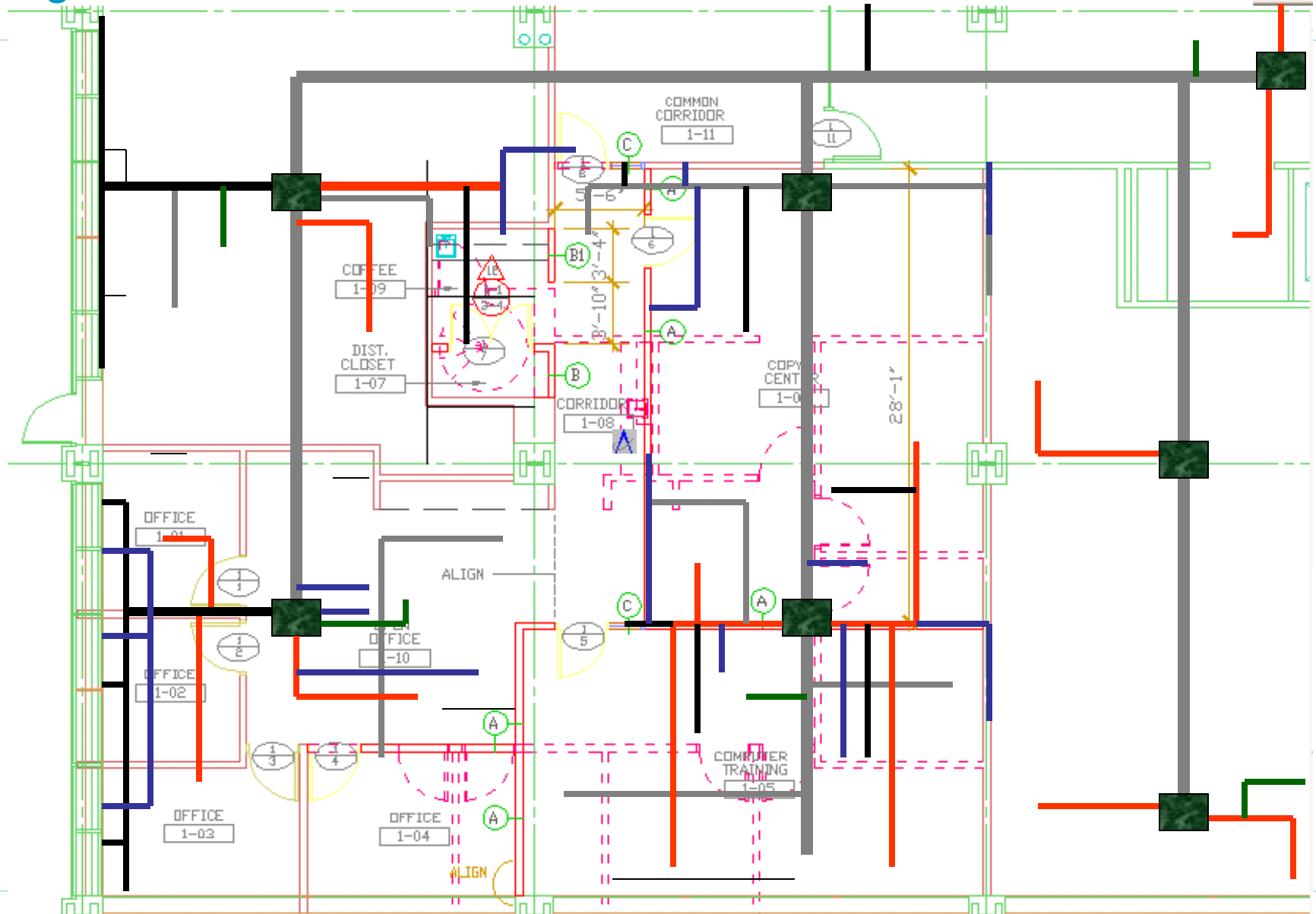
Fibras PreTerminadas

Categoría 6 Aumentada

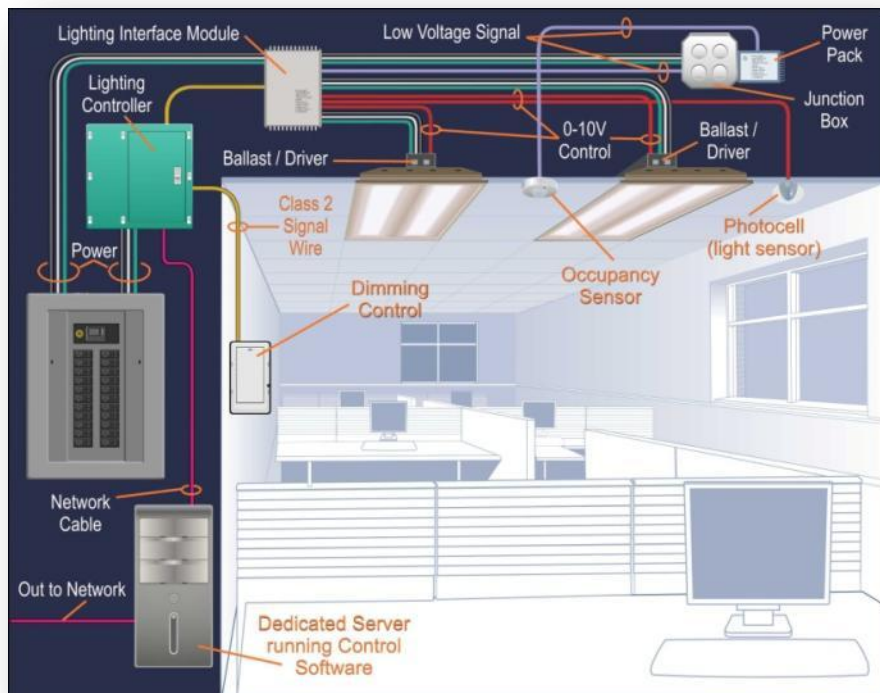




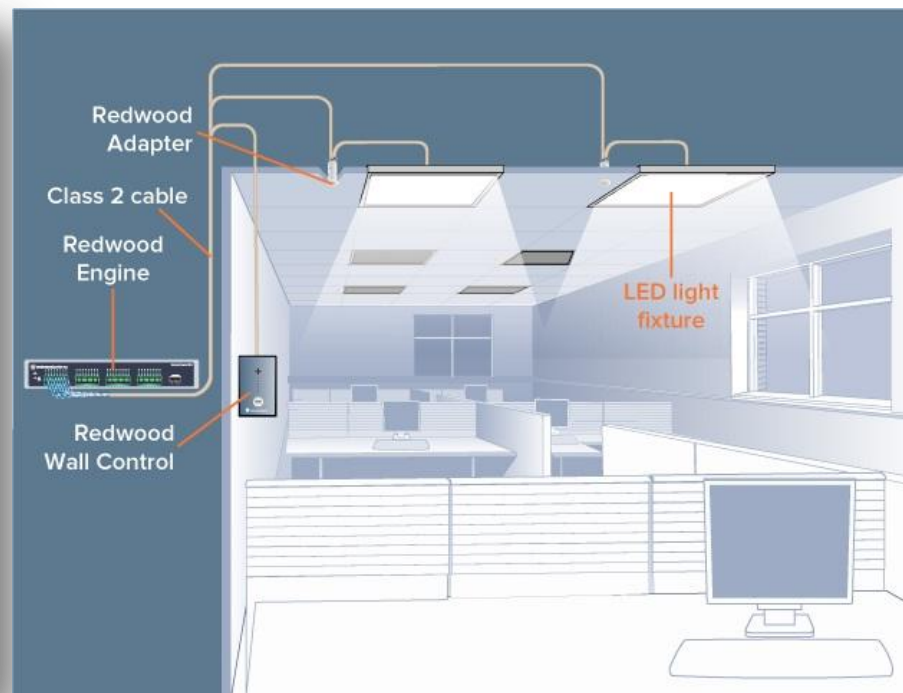




Sistema Tradicional



LED + IP + Cableado Estructurado



Instalación más sencilla

Control y Energía Unificado

Máxima inteligencia y flexibilidad



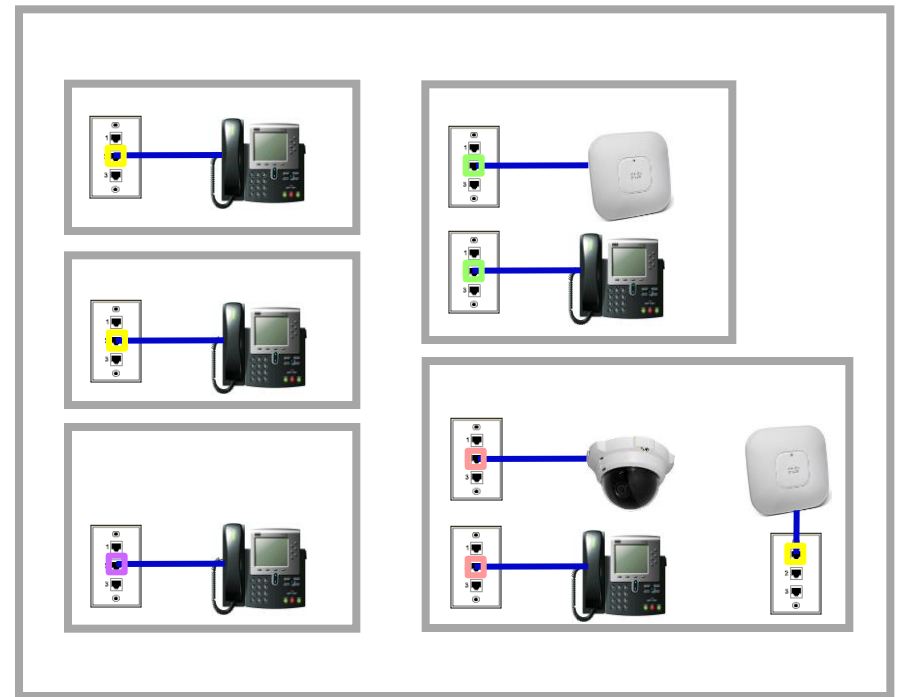
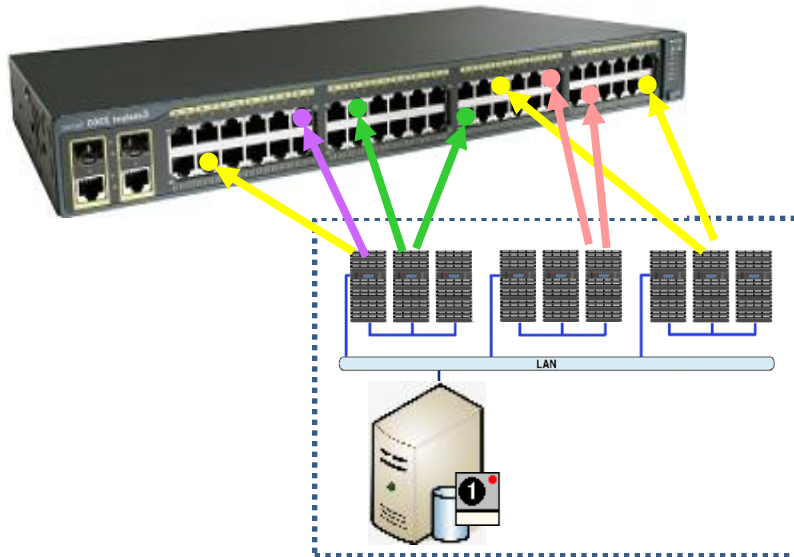
COMMScope
Intelligence



Cisco
EnergyWise

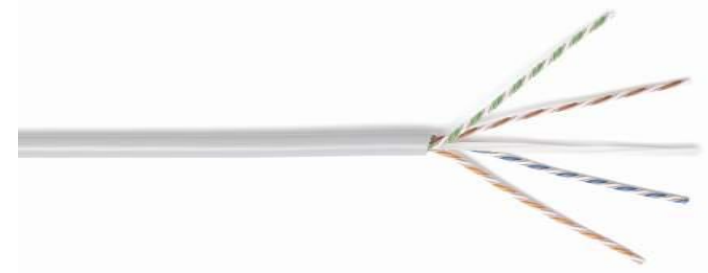
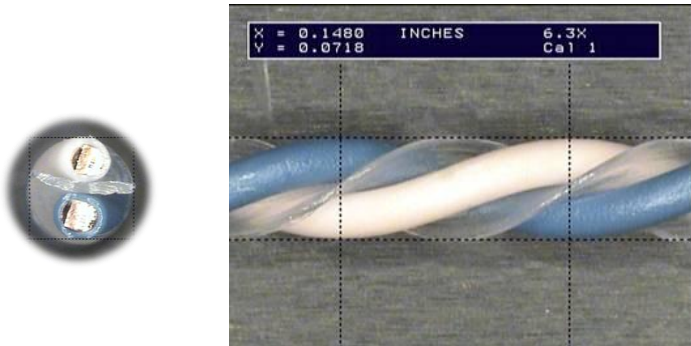
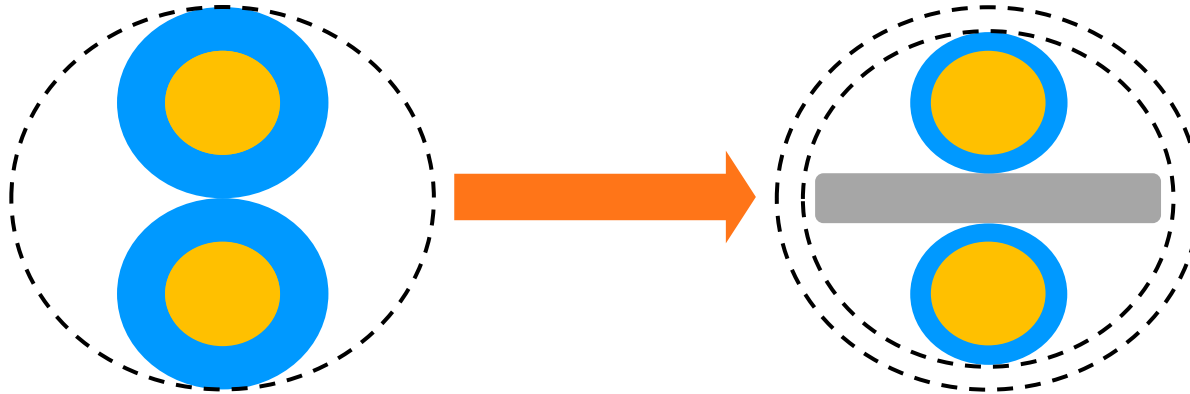


- Aplicación de Políticas de Administración de consumo de Energía
 - Información de ubicación se **mapea automáticamente** a los puertos del switch al aplicar la Política correspondiente
 - Cambios de ubicación son monitoreados y **automáticamente actualizados** en tiempo real



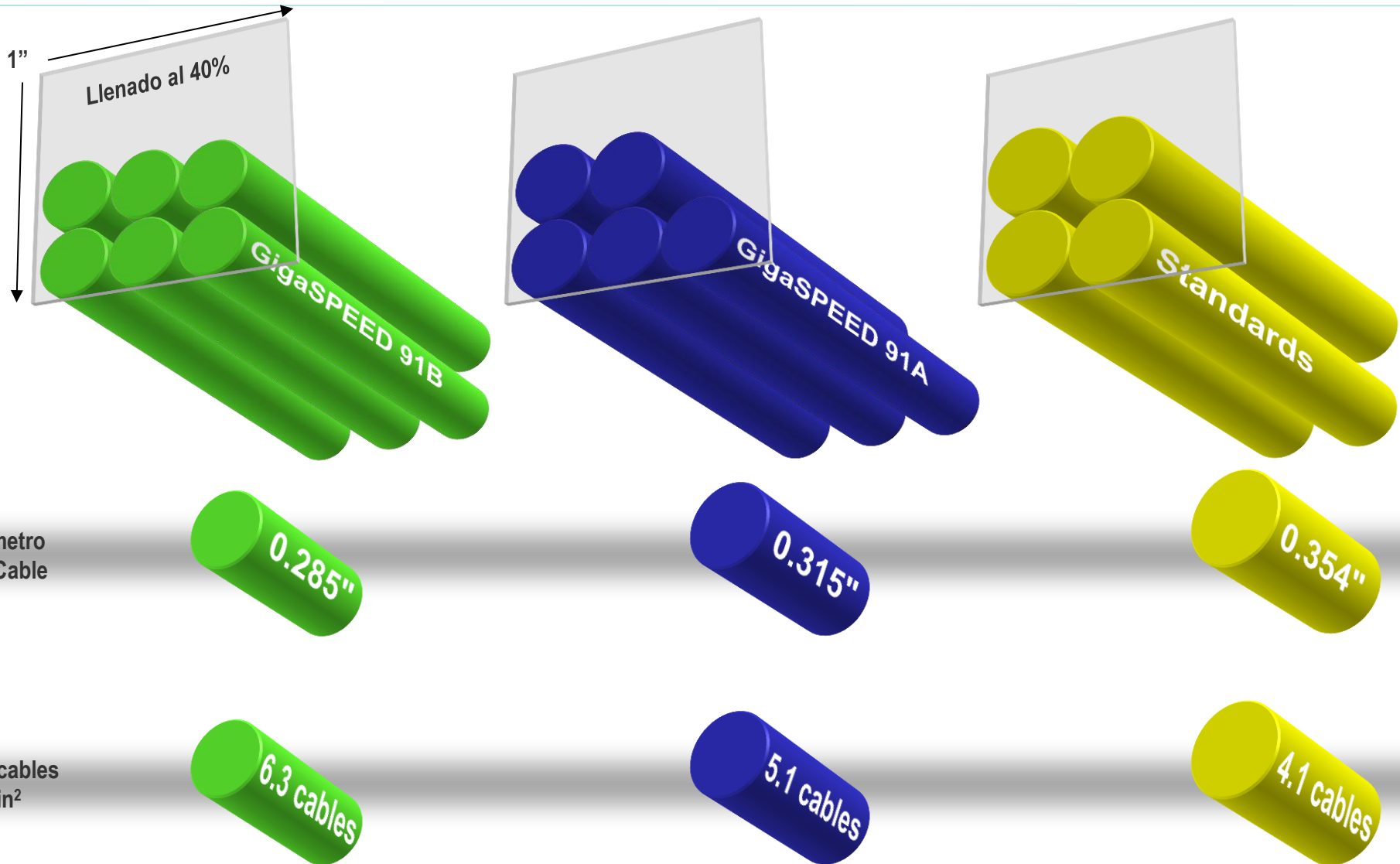
UTP Cat 6A más delgado del mercado

COMMScope®



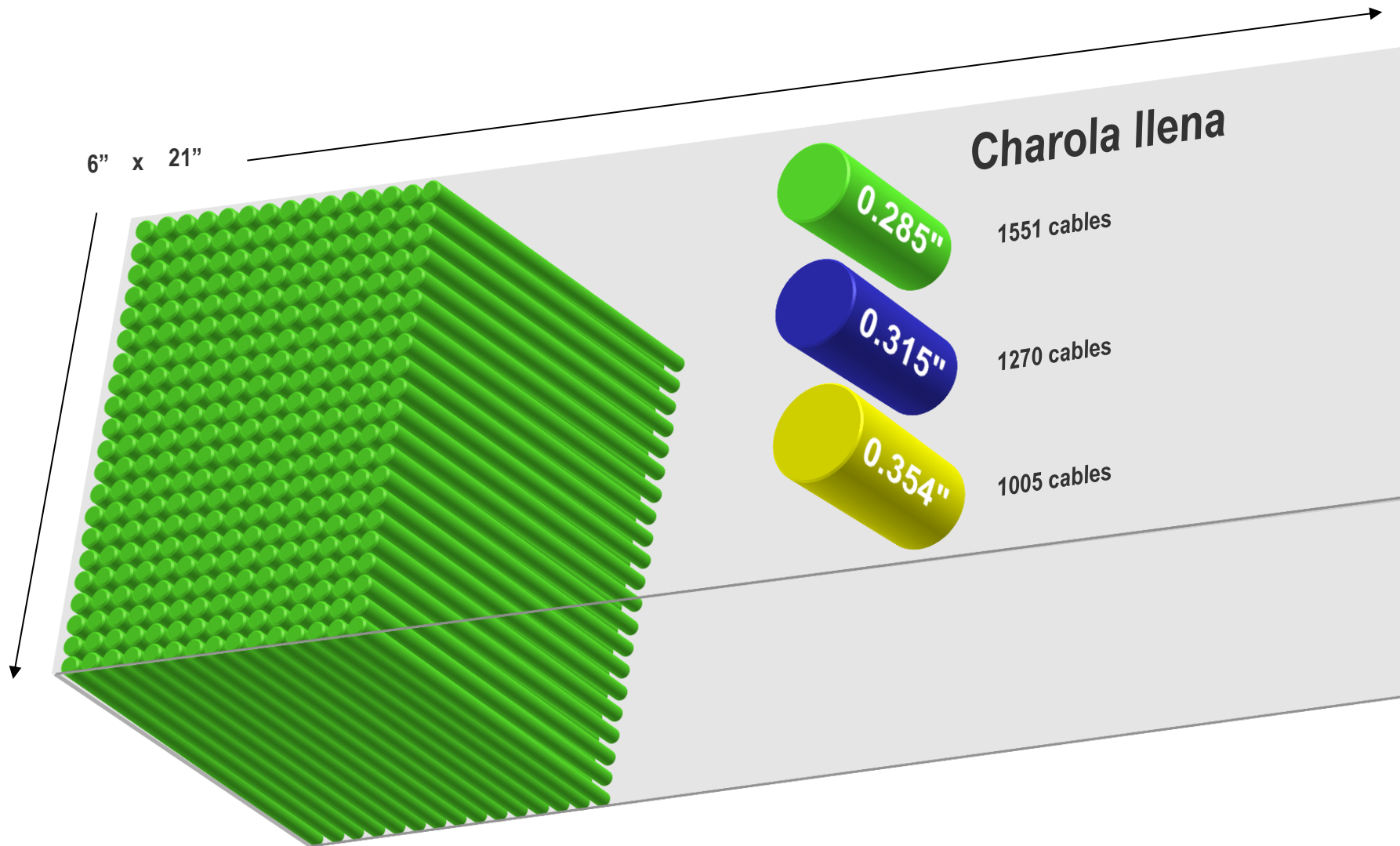
22% más cables en el mismo espacio

Mayor Densidad – Más cables por in²



Mayor Densidad – Más cables por in²

COMMScope®



Mejor estética

COMMSCOPE®



Mejor estética

COMMSCOPE®

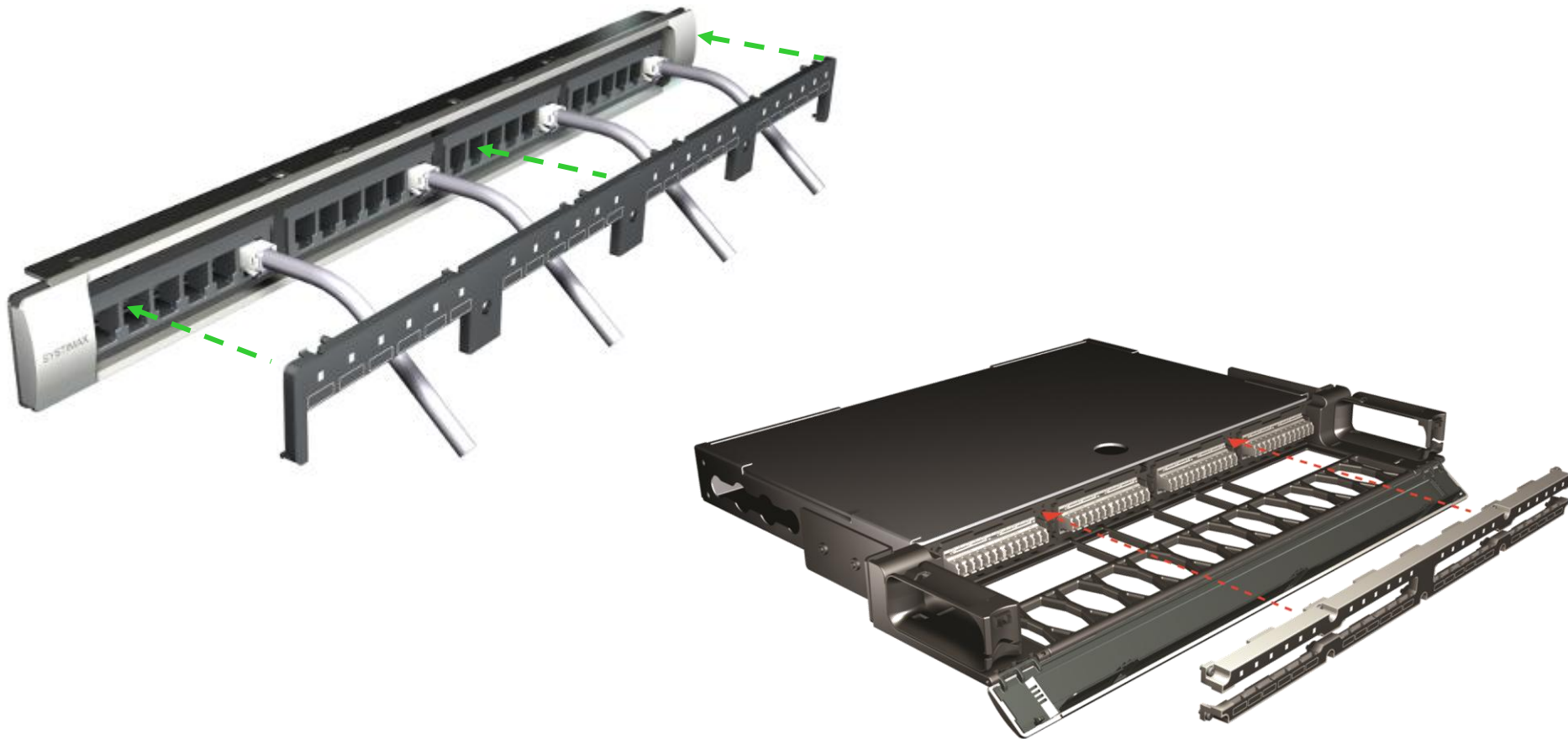












Sin interrupción de servicio!
Sin desconectar cordones de parcheo



- Pantalla multi-color touch screen de 4.3" con LED de Actividad

ipatchsm7/systemmanager/Aspx/SiteManager.aspx?catalog=sitmqr

The screenshot displays the COMMScope imVision System Manager interface, which is used for managing network infrastructure. The interface is divided into several sections:

- Left Panel:** A hierarchical tree view showing the site structure. The selected site is "City 01", which contains sub-sites like "Medellin", "Shanghai", "Suzhou", and "Dannys Campus 01".
- Top Panel:** A table titled "Contents of Site" showing a list of network objects. The table has columns for "Object Name", "Results", "Field", "Object Type", and "Location".
- Bottom Panel:** A detailed view of a specific port, titled "Trace for Port 01". It shows a network diagram with a central switch and a server, connected by a cable. Below the diagram, there are several data boxes providing details about the port and its associated devices.

Object Name	Results	Field	Object Type	Location
RH-3-WKSTN-1	RH-3-WKSTN-1	Name	Generic Panel	Site/HQ/Floor 03/TC/1:1 Rack 001/RH-3-W
RH-3-WKSTN-2	RH-3-WKSTN-2	Name	Generic Panel	Site/HQ/Floor 03/TC/1:1 Rack 001/RH-3-W
RH-3-SRV-1	RH-3-SRV-1	Name	Generic Panel	Site/HQ/Floor 03/TC/1:1 Rack 001/RH-3-S
RH-3-S2	RH-3-S2	Name	Network Equipme	Site/HQ/Floor 03/TC/1:1 Rack 001/RH-3-S
RH-3-S1	RH-3-S1	Name	Network Equipme	Site/HQ/Floor 03/TC/1:1 Rack 001/RH-3-S

Trace for Port 01

Site/HQ/Floor 03/3N-100/3N-100/01

The diagram shows a network topology with a central switch and a server. The switch is connected to a server via a cable. The server is labeled "RH-03849".

Data

Service	01	01	01	01	01
Service	RH-3-S1 [1] 1:1 Rack 001 TC Floor 03 HQ Site	RH-3-WKSTN-1 [1] 1:1 Rack 001 TC Floor 03 HQ Site	RH-3-WKSTN-2 [1] 1:1 Rack 001 TC Floor 03 HQ Site	3N-100 [1] 3N-100 Floor 03 HQ Site	RH-03849 3N-100 Floor 03 HQ Site

Infraestructura con Inteligencia

The screenshot displays the COMMScope imVision System Manager interface. The left sidebar shows a hierarchical tree of sites, with 'Dubai HQ' and 'JBC 5' selected. The main window is titled 'Contents of 1:1 Rack 001' and shows a table of equipment. The 'Rack View (Front)' on the right shows a visual representation of the rack with 16 slots, each containing a different piece of equipment.

Name	IP Address	Position	Total Ports	Available Ports
Panel 01		1	48	46
Cord Organizer 01		3		
Panel 02		4	48	48
Cord Organizer 02		6		
Panel 03		7	48	48
Cord Organizer 03		9		
iPatch Manager	192.168.000.001	11		
Cisco 2950	192.168.000.005	12	0	0

The screenshot displays the COMMScope imVision System Manager interface. The left sidebar shows a hierarchical tree of sites, with 'Dublin, Ireland' and 'Bray 1' selected. The main window is titled 'Contents of Building 01' and shows a detailed floor plan of a building. The floor plan includes various rooms, corridors, and equipment locations, with a central area labeled 'ASCENSORES'. The right sidebar shows the 'Properties' panel for the selected building, including fields for Name, Address, Contact, Layout, Scale for Working Zoom, and Level.

Properties

Information	
Name	Building 01
Address	
Contact	
Layout	Layout 01
Scale for Working Zoom	100
Level	

ADMINISTRACIÓN DE CONFIGURACIÓN



Documentación Actualizada
Descubrimiento de Equipos
Mapeo de ubicaciones
Integración planos de piso
Reportes en Tiempo Real

ADMINISTRACIÓN DE INCIDENTES



Detección Cambios en Tiempo Real
Monitoreo Estado Puerto de Switch
Detección de Intrusión
Notificación de Eventos
Integración con Equipos Externos

ADMINISTRACIÓN DE CAMBIOS



Ordenes Electrónicas
Guía avanzada para técnicos
Provisión inteligente de servicios
Procesos de Migración

VISIÓN

+

CONOCIMIENTO

=

CONTROL



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IEEE Launches Next Generation of High-Rate Ethernet with New IEEE 802.3ba Standard

First-ever Ethernet standard to specify two new speeds addresses explosive demand for increased bandwidth, sets stage for next wave of technology innovation

Contact:

Karen McCabe

+1 732-562-3824, k.mccabe@ieee.org

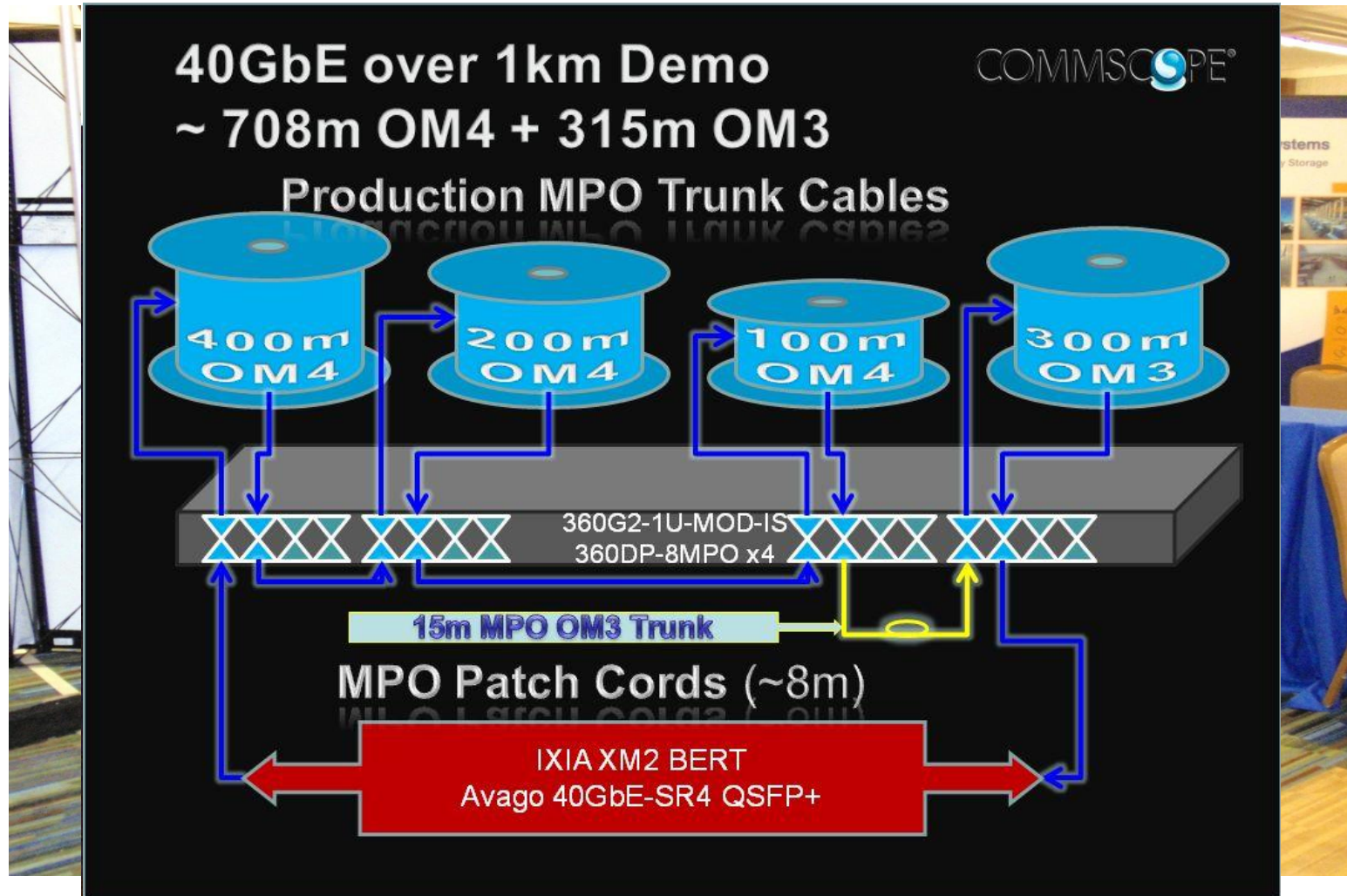
PISCATAWAY, N.J., USA, 21 June 2010 –IEEE, the world's leading professional association for the advancement of technology, today announced the ratification of IEEE 802.3ba 40Gb/s and 100Gb/s Ethernet, a new standard governing 40 Gb/s and 100 Gb/s Ethernet operations. An amendment to the IEEE 802.3 Ethernet standard, IEEE 802.3ba, the first standard ever to simultaneously specify two new Ethernet speeds, paves the way for the next generation of high-rate server connectivity and core switching.

The IEEE 802.3ba standard, ratified June 17, 2010, addresses critical challenges facing technology providers today, such as the growing number of applications with demonstrated bandwidth needs far exceeding existing Ethernet capabilities, by providing a larger, more durable bandwidth pipeline. Furthermore, collaboration between the IEEE P802.3ba 40Gb/s and 100Gb/s Ethernet Task Force and the International Telecommunication Union's Telecommunication Standardization Sector (ITU-T) Study Group 15 ensures these new Ethernet rates are

- Presentación de JDS Uniphase en el Interop y OFC 2008 demostrando la transmisión en paralelo de 123.75 Gb/s sobre cableado SYSTIMAX – InstaPATCH utilizando FO LazrSPEED 300 (OM3)



Live 40GbE & imVision Demo's:



Category 8 Structured Cabling Channel Demonstration by Commscope

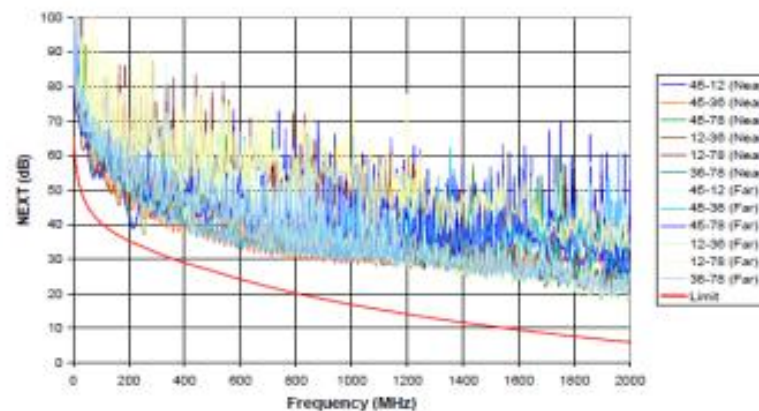
Wayne Larsen

IEEE NGBASE-T SG January 2013
Larsen_01_0113_NGBT

Intertek

Test report number 100948530CRT-001b
TIA-568-C.2-1, Draft 0.5
Permanent link, 5 meters

Near-End Crosstalk



IEEE NGBASE-T SG November 2012

23

IBW

Coax

FTP

UTP

Fibra

6A/E_A

6/E

5E/D

6A/E_A

6/E

5E/D

OS2

OM4

OM3

OM2

OM1

**Ancho de banda,
movilidad y soporte a futuro**

Pre-terminadas

Gestión y Monitoreo

Gabinets y Racks

Redes Convergentes y BMS

Soporte de confianza

Nuestros Clientes



UNIVERSITY OF
OXFORD



Massachusetts
Institute of
Technology



YESHIVA UNIVERSITY



香港浸會大學
HONG KONG BAPTIST UNIVERSITY



THE UNIVERSITY OF
CHICAGO

Nuestros Clientes



LAUREATE
INTERNATIONAL
UNIVERSITIES®

COMMScope®



Education

SYSTIMAX® Solutions

CommScope Infrastructure at the University of Sonora Evolves Ahead of Fast Growing Network Demand

SYSTIMAX® GigaSPEED® X10D copper solution delivers 10G performance in the data center and TeraSPEED® fiber extends the network backbones

Since 2000, the University of Sonora has relied on SYSTIMAX solutions to connect students and staff to the IT resources they need. In the latest phase of network evolution, fully compatible 10G copper and fiber solutions give improved performance of 20,000 information outlets across nearly 100 buildings.

The University of Sonora is the main higher education institution in the Mexican state from which it takes its name. It provides courses for around 30,000 students on campuses in the towns of Nogales, Sanitza, Caborca, Hermosillo, Cajeme and Navojoa.

"We know from our experience with SYSTIMAX solutions that they will deliver all the promised performance. For our latest requirements, they offered a range of high quality solutions including 10G copper and fiber cabling. These will give our students and staff faster access to the IT resources they need – and we are sure we can depend on them because of their inherent reliability together with the support provided by CommScope and its BusinessPartners."

MA. Chris Abad Tapia
Sonora University's IT Director

www.commscope.com



COMMScope®



Education

Oxford University Computer Services Goes with CommScope for Performance and Reliability Demanded by Shared Data Centre Infrastructure

High performance SYSTIMAX® 360 solutions lay a path to intelligent infrastructure for Oxford's 38 colleges

"We are all facing the increasing costs – in time and money – of managing computing resources. Rising maintenance and power bills, are compounded by the need for greater environmental accountability and increasing pressure on space. Shared solutions for managing data offer an attractive option in meeting these challenges – one that can reduce the need for additional capital investment and lower the pressures on IT departments."

David Birds,
Data Centre Manager at OUCS

Summary: OUCS knew it could cut Oxford colleges' data centre costs by up to 30 per cent with an advanced shared facility, but it also wanted to reduce risk of service interruption. To achieve both aims, it chose SYSTIMAX 360 copper and fiber network infrastructure from CommScope. These deliver guaranteed reliability and performance to support a vast range of applications, and are easily upgraded to enable intelligent infrastructure management.

www.commscope.com



COMMScope®



Educación

"La Universidad del Valle de México y UNITEC, conjuntamente, conforman la universidad privada más importante de México. Las operaciones de IT de la Universidad no sólo tienen que ser de amplio alcance, sino también eficientes; sin el mejor soporte y la mejor tecnología de redes, eso sería muy difícil de lograr".

Julio Galindo Ramírez,
Director de Operaciones de IT
de UUV en Latinoamérica.

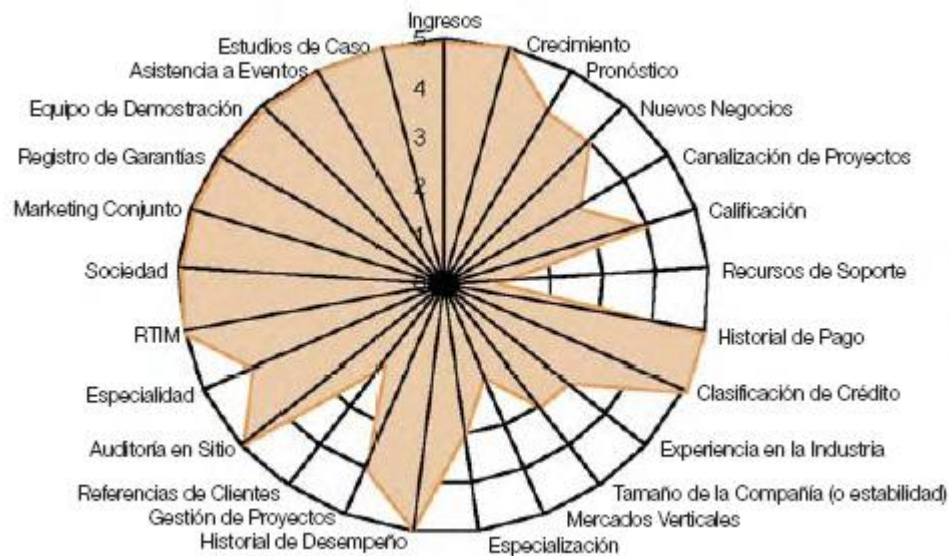
Laureate International Universities se prepara para recibir el futuro con la tecnología CommScope.

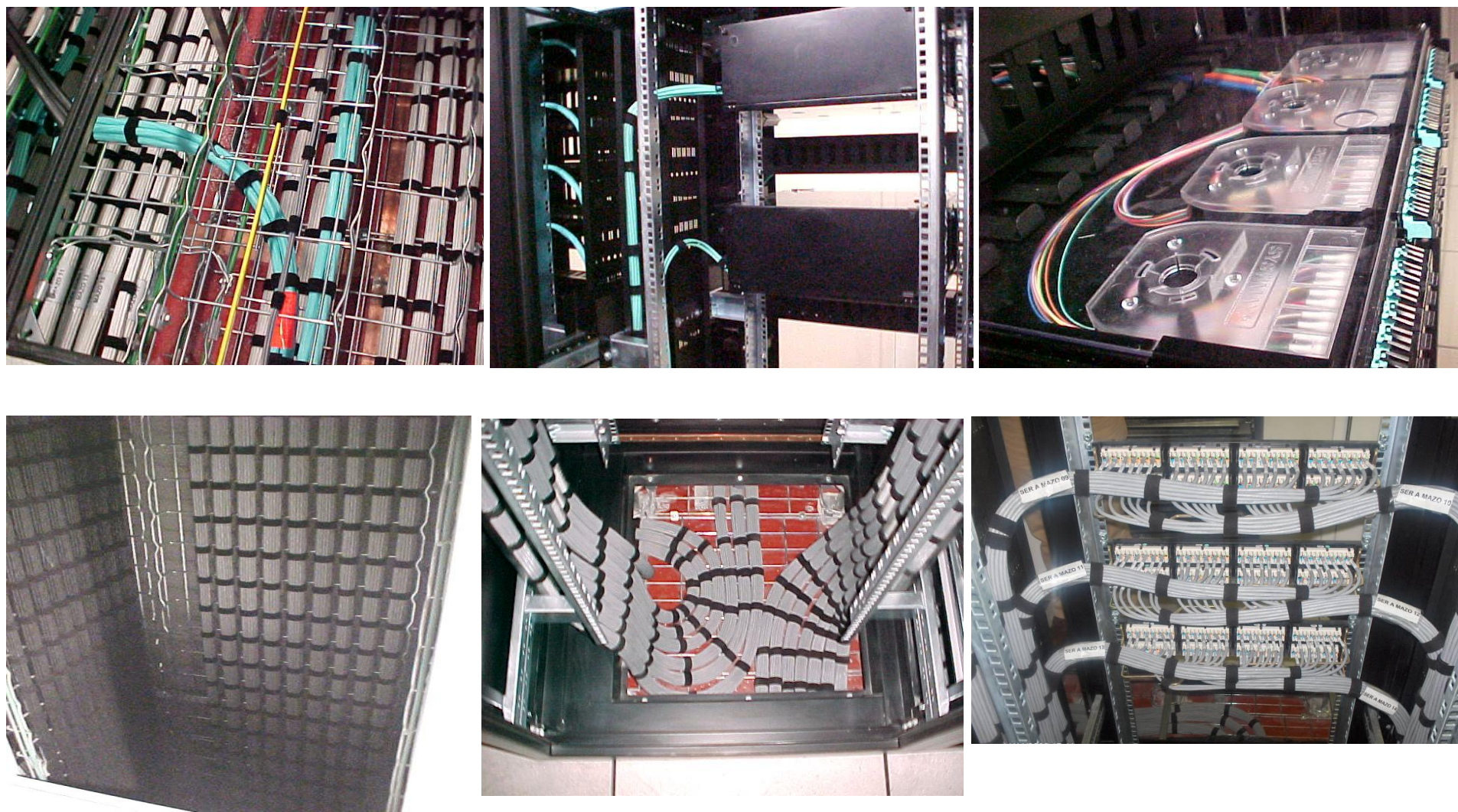
La Universidad del Valle de México y UNITEC hacen de la infraestructura de redes SYSTIMAX® su norma al conectar a más de 75.000 estudiantes y miembros del personal a lo largo de sus 45 campus.

Resumen: Las comunicaciones constituyen la piedra angular del éxito académico y comercial en todas las principales instituciones educativas. Para la instalación de su infraestructura de red, la cual es vital para sus operaciones, Laureate Universities de México confía en el portfolio de soluciones CommScope que cuenta con soporte global. Ahora, las Universidades les están otorgando a la eficacia operativa y a los servicios brindados a los estudiantes una relevancia superior mediante nuevas inversiones en conectividad de cobre y fibra óptica de avanzada.

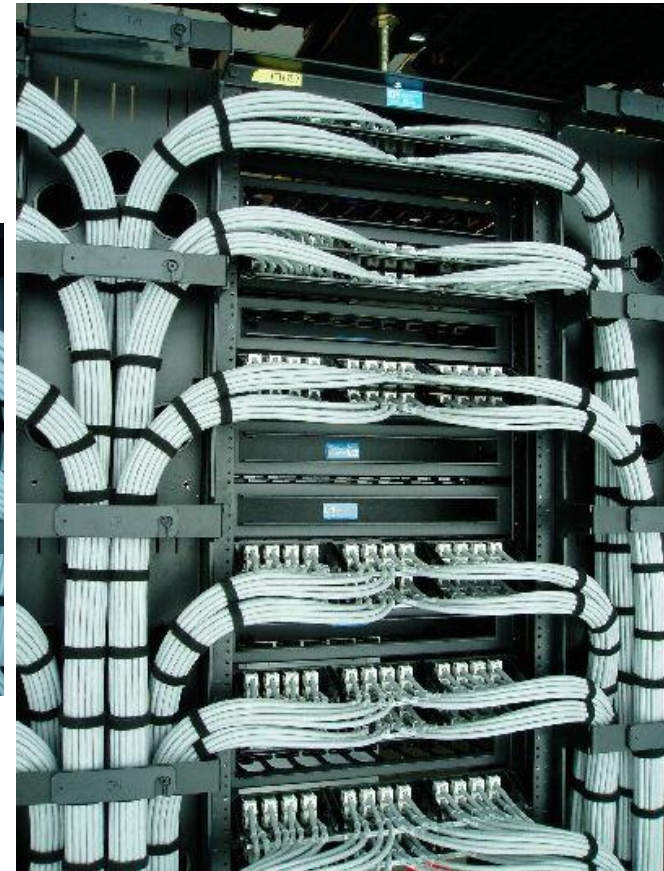
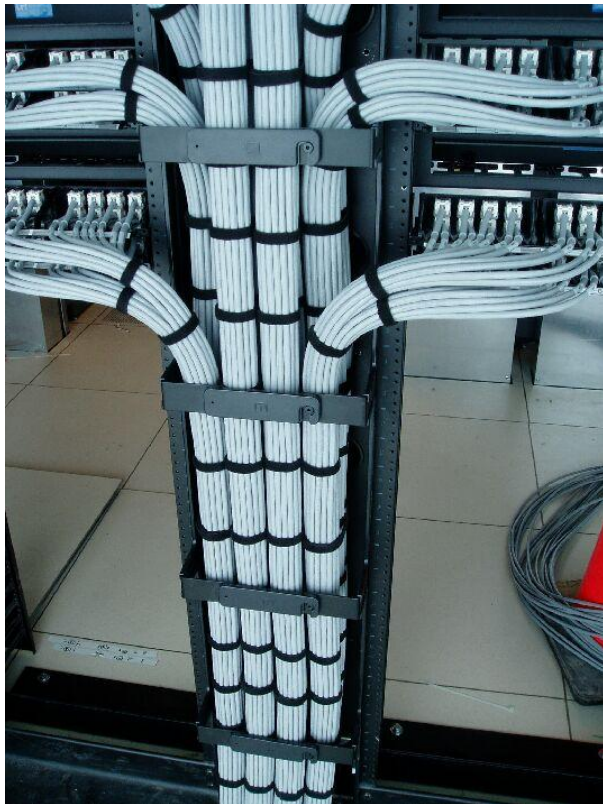
www.commscope.com







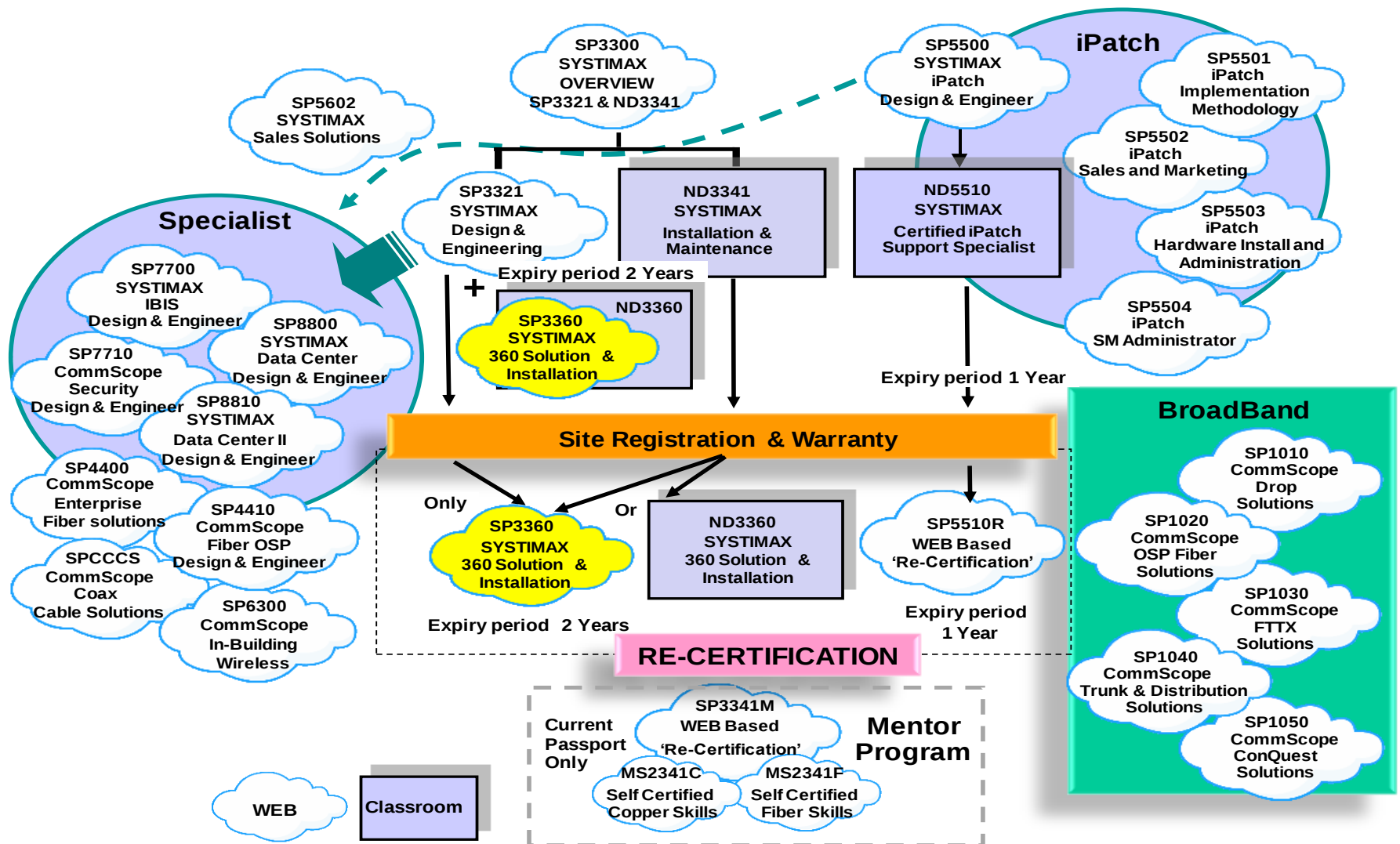




Podemos colaborar con...

- **COMMSCOPE Infrastructure Academy**
- Amplio material y recursos educativos
- Formato “e-learning” entrega flexibilidad y disponibilidad
- Aprender a ritmos propios y en diferentes niveles
- Variedad de cursos y especialidades





Universidad

- Disertantes para eventos y clases especiales
- Asesoría y Soporte en proyectos de infraestructura
- Publicación de “casos de estudio”
- Apoyo en planes de estudio que incluyan capacitación en-línea

Cuerpo Docente

- Acceso a capacitación en-línea.
- Certificados
- Invitación a seminarios, talleres y eventos de actualización impartidos por COMMSCOPE

Estudiantes

- Acceso a capacitación en-línea
- Certificados



OBJETIVO: Acceso a la información y comunicación permanentes y eficaces

RETOS: Movilidad, Ancho de Banda y Soporte a Futuro

TENDENCIAS: Diseños Verdes, Integrados y Convergentes

SOLUCIONES: Innovadoras, más estéticas, eficientes e inteligentes

ESTÁNDARES: Educativo, 40 / 100 GbE, Cat 8

SOCIOS TECNOLÓGICOS: Profesionales, altamente especializados y de largo plazo

PROPUESTA DE COLABORACIÓN

Gracias!

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