
ANIXTER IPASSURED SM
FOR DATA CENTERS
Anixter is a leading global supplier of communications and security products, electrical and electronic wire and cable, fasteners and other small components. We help our customers specify solutions and make informed purchasing decisions around technology, applications and relevant standards. Throughout the world, we provide innovative supply chain management solutions to reduce our customers’ total cost of production and implementation.
Anixter’s ipAssured Program

Today’s economic climate is driving the need for greater efficiencies and reduced costs. Managers expect more for less. Security threats pose catastrophic risks. End-users are demanding feature-rich content and continuous uptime. At the center of it all, power-hungry data centers are consuming more energy as data-intensive applications are pushing past network and storage capacity boundaries.

Anixter ipAssuredSM includes physical infrastructure products and best practices to meet existing and future data center needs. Whether you want to improve the efficiency of an existing data center, make major upgrades and improvements, or build a new state-of-the-art facility, Anixter makes choosing the right infrastructure simple.

Data Center Trends

Several trends are directly impacting the design, performance and efficiency of data centers.

Trends that are affecting data centers include:

- Network traffic and systems integration
- Government regulations
- Virtualization
- Sustainability and environmental impact
- Cost reductions and improved efficiency
- An increase in power consumption requirements
- Increasing bandwidth requirements.

Anixter ipAssured helps address these top concerns of network and facility managers.

Top Network and Facility Concerns

Even small changes can have a huge impact on the efficiency, conservation and profitability of your data center.
Anixter ipAssured for data centers is an infrastructure assurance program that includes the physical infrastructure products (including network cabling, power and cooling solutions, racks and cabinets, security as well as management and monitoring) and best practices needed to support current and future data center applications. The program considers maximizing the efficiency, sustainability and profitability of your data center.

**Determining the Right IP-Class**

Anixter ipAssured is divided into three distinct classes:

- **IP-Class 1+ Refined**: For existing data centers with limited expansion plans and low computing density
- **IP-Class 5+ Enhanced**: For existing facilities with expansion plans and efficiency upgrades through retrofit or new infrastructure builds
- **IP-Class 10+ Advanced**: For Greenfield or retrofit data centers using state-of-the-art network and infrastructure designs

These Classes provide users with readily identifiable categories of products and best practices for creating a robust infrastructure that will maximize the efficiency, sustainability and profitability of your data center.

Within each IP-Class level, ipAssured includes particular products and best practices to meet your specific data center need. We cover physical infrastructure products including:

- Cabling infrastructure
- Racks and cabinets
- Power and cooling
- Physical security
- Management and monitoring
**Cabling Infrastructure**

Cabling is one of the most important pieces to consider when designing a data center. The cabling infrastructure represents approximately 5–10 percent of an overall IT budget, but it should be designed to support the application demands of a data center for upward of 10–15 years. See page 6 for more information on cabling infrastructure tests conducted at the Anixter Infrastructure Solutions Lab℠.

### ipAssured for Data Centers: Cabling Infrastructure Classes

<table>
<thead>
<tr>
<th><strong>Copper Cabling</strong></th>
<th><strong>Copper Cabling</strong></th>
<th><strong>Copper Cabling</strong></th>
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</thead>
<tbody>
<tr>
<td>Exceeds Category 5e</td>
<td>Exceeds Category 6</td>
<td>Exceeds Category 6A</td>
</tr>
<tr>
<td>155 MHz usable bandwidth/extended headroom</td>
<td>250 MHz usable bandwidth/extended headroom</td>
<td>500 MHz usable bandwidth/extended headroom</td>
</tr>
<tr>
<td>Support of 1 Gigabit Ethernet</td>
<td>Support of 1 Gigabit Ethernet</td>
<td>Support of 10 Gigabit Ethernet</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Fiber Cabling</strong></th>
<th><strong>Fiber Cabling</strong></th>
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<tbody>
<tr>
<td>ISO/IEC OM2</td>
<td>ISO/IEC OM3</td>
<td>ISO/IEC OM4</td>
</tr>
<tr>
<td>10 Gigabit Ethernet distance – 300 meters</td>
<td>10 Gigabit Ethernet distance – 300 meters</td>
<td>10 Gigabit Ethernet distance – 550 meters</td>
</tr>
<tr>
<td>40/100 Gigabit Ethernet distance – 100 meters</td>
<td>40/100 Gigabit Ethernet distance – 150 meters</td>
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### Racks and Cabinets

Choosing the proper racks and cabinets will help increase efficiency as well as sustainability. As the IT environment changes over time, so must the racks and cabinets. Your base racks should have the ability to bear increasing density demands over time and support the addition of accessories such as cable or thermal management.

### ipAssured for Data Centers: Rack and Cabinet Classes

<table>
<thead>
<tr>
<th><strong>Racks</strong></th>
<th><strong>Cabinets 1+ requirements plus:</strong></th>
<th><strong>Cabinets 5+ requirements plus:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4-post open frame</td>
<td>4-post steel frame, fully enclosed</td>
<td>78% perforated doors</td>
</tr>
<tr>
<td>19&quot; EIA 310-D compliant with identified RMU spacing</td>
<td>63% perforated doors</td>
<td>Width to fit Cat 6A cable and cable management</td>
</tr>
<tr>
<td>Depth adjustable rails</td>
<td>Width to fit Cat 6 cable and cable management</td>
<td>Extensive cable management</td>
</tr>
<tr>
<td>Basic cable management</td>
<td>Basic thermal management</td>
<td>Cabinet level security system locks and audit trail capture</td>
</tr>
<tr>
<td>2,000-lb. capacity</td>
<td>Electronic locking system</td>
<td>Capacity to accommodate up to 2,500-lb. payload</td>
</tr>
<tr>
<td>Leveling feet</td>
<td></td>
<td>Grounding kit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UL Listed 60950</td>
</tr>
</tbody>
</table>
Power and Cooling

Significant efficiency gains can be achieved at the site infrastructure level. Equipment should be right-sized to the IT load while ensuring flexibility to expand when needed. Use energy-efficient equipment and remove power conversions when possible. Substantial efficiency gains can also be achieved with a proper airflow optimization strategy.

ipAssured for Data Centers: Power and Cooling Classes

**UPS**
- IP-Class 1+ requirements plus:
  - Scalable or modular
  - Input power factor correction
  - Min. of 92% efficient at 50% load

**PDU**
- 208 V, single phase
- 208 V, single phase, metered, monitored or switched
- Three-phase basic

**Cooling**
- IP-Class 1+ requirements plus:
  - Passive containment solutions
  - Hot and cold aisle containment
  - Close-coupled in-row cooling
  - Enclosure-based heat exchangers

**UPS**
- IP-Class 5+ requirements plus:
  - Online technology, configurable
  - Ultra efficiency ratings, min. 95% at 50% load
  - Configurable runtime, with alternative fuel supply capability

**PDU**
- Three-phase basic, IP metered, monitored and/or switched

**Cooling**
- IP-Class 5+ requirements plus:
  - Fully ducted containment solutions
  - Variable speed, fans, pumps and chillers
  - Free cooling air and water side economizers

Additional Considerations

- Physical security of the data center and its critical assets
- Management and monitoring solutions — including Intelligent Infrastructure Management (IIM) — that enable real-time administration of the data center’s physical infrastructure systems
- Preterminated copper and fiber cabling systems that can reduce downtime

According to the Environmental Protection Agency, energy consumption in the U.S. is expected to double every five years for large data centers. This rate of increase is unsustainable as it would result in a 1,600 percent increase in consumption by 2025.
IpAssured Solution and Cost Saving Potential

Implementing Anixter’s ipAssured solutions for data centers can result in up to a 55 percent savings in energy costs. The chart below provides an example of the savings that can be achieved with the various IP-Class levels and a few examples of the best practices and products that can contribute to your cost savings.

Estimated IpAssured Energy Savings
**The Anixter Infrastructure Solutions Lab**

Anixter’s Infrastructure Solutions Lab provides customers with unparalleled insight into the latest technologies supporting today’s data centers. The Lab tests to relevant physical infrastructure standards to deliver consistency and quality across product lines and within systems. The Lab also tests interoperability of IP-based systems to help customers integrate products and follow the trend toward convergence. With UL Certification from Underwriters Laboratories’ Performance Verification Program, the Infrastructure Solutions Lab tests full twisted-pair and optical cabling components and systems with complete throughput testing.

Anixter also has a variety of facilities around the globe that provide technical and educational leadership. Customers have used Anixter’s state-of-the-art labs to test the image quality on dozens of analog and IP video surveillance cameras, conduct computational fluid dynamics (CFD) modeling techniques to optimize cooling and energy efficiency, and evaluate network infrastructures to determine if they will successfully handle bandwidth demands.

Many tests have been conducted in The Lab to demonstrate that ipAssured cabling products not only meet but also exceed recommended industry standards. These tests include the effects of cable bundling and increased temperatures on the performance of cabling. The results proved that higher rated cables (such as Category 6A) performed best under less than ideal conditions.

### Challenge

Anixter decided to put the ipAssured value proposition to the test by conducting an evaluation of its own corporate data center, which was built in 2003 when many of the best practices and industry standards that we have today were not developed. It was experiencing several challenges including:

- Inefficient exhaust air management
- Reduced cooling capacity
- Areas of low static pressure
- Inefficient infrastructure performance.

As a result, Anixter’s data center was not performing at an optimal level.

### Solutions

By analyzing the results of the computational fluid dynamics (CFD) model and identifying areas of inefficiency, Anixter found that by using the best practices from its ipAssured program, it was able to reduce its overall energy consumption by implementing:

- Hot and cold aisle layout
- Blanking panels
- Proper cable management.

### Results

The improvements provided by ipAssured allowed for better management of the exhaust air within the data center, which improved overall cooling capacity. The solution resulted in a significant enough change where one of the three perimeter computer room air conditioner units could be shut down.

**A 12 percent total annual cost savings could be realized using an ipAssured 1+ Refined solution.**

### A CASE STUDY ON IPASSURED: ANIXTER’S CORPORATE DATA CENTER

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**Ask your Anixter representative about scheduling your Data Center HealthCheck℠**

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**Six around one bundle test**

Throughput and error rates are measured on bundled cables, which created a worst-case alien-crosstalk environment. Cat 6A systems showed superior performance results when compared to Cat 6 solutions.
A History of Innovation

In the late 1980s, Anixter discovered in early testing that twisted-pair cabling performance varied widely. As a result, Anixter developed “and defined performance requirements for a twisted-pair networking infrastructure based on customers’ applications. The basis for these performance requirements was adopted by the ANSI/TIA/EIA standards bodies and renamed “Categories” (e.g., Category 3 and Category 5) in the 1990s.

In addition to its work on structured cabling, Anixter was also a driving force in helping to establish the creation of BICSI and the Registered Communications Distribution Designer (RCDD) program, helping to write the first RCDD training manuals. Because technology is constantly evolving, Anixter and The Lab’s dedication to technical innovation continues today. From the active involvement in numerous standards committees to the development of Anixter ipAssured, Anixter is committed to exploring the latest technologies and test methodologies in the network and security industries.

The Anixter Difference

Anixter understands the technical requirements needed to run an efficient, future-ready data center and supplies only the best products to meet the technical demands of the end-user. Anixter partners with manufacturers that have been endorsed by industry-leading organizations to provide cabling infrastructure that perform above standards. Through its Infrastructure Solutions Lab, Anixter gives customers the chance to test these products in real-world scenarios in order to make the right purchasing decision.

With more than 90 RCDDs, Anixter has technical resources in the field that provide customers with training and support on products, applications and trends affecting a particular market. Anixter has a global network of security specialists and systems engineers with accreditations from leading industry organizations ready to help customers make informed purchasing decisions. Anixter’s educational curriculum—Anixter University (AU)—creates awareness and provides general solutions for current and future technologies. The University includes Data Center College with classes such as Cabling Infrastructure Design, Power Distribution and Thermal Management. In addition, Anixter also provides customized training sessions for its customers.

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For more information on Anixter University, visit anixter.com/au.
Our Supply Chain Solutions

Selecting a cabling infrastructure through Anixter ipAssured is only the beginning of an installation. A successful deployment strategy can help deliver materials to the job site in the right condition, ready to be installed. Anixter’s Supply Chain Solutions can help customers stay profitable and competitive in the marketplace. By customizing our Supply Chain Solutions, we provide customers with effective, scalable and repeatable solutions to eliminate costs, save time, mitigate risk and enhance productivity throughout the deployment process.

READY!™ Deployment Services by Anixter map our distribution and Supply Chain Solutions to the construction or deployment process of any technology or security project. We combine sourcing, inventory management, kitting, labeling, packaging and deployment services to simplify and address material management challenges at the job site(s). READY! Deployment Services by Anixter will help you improve the speed of deployment, lower your total cost of deployment and deliver your product specifications as planned.

The Gartner Group states that green building, especially retrofits and renovations, will be a big growth sector in the near future. Consider LEED project registrations to help you follow the path to a greener data center. Anixter can provide materials and resources as well as innovation and design processes that can contribute to LEED certification. Through its READY!™ Deployment Services, Anixter can help to further reduce waste at the job site.

Learn more about Anixter and our ipAssured program, contact your local sales representative at 1.800.ANIXTER or visit anixter.com/ipassured.