FROST & SULLIVAN BEST PRACTICES AWARD

IT/OT SECURITY FOR SMART BUILDINGS - GLOBAL

Enabling Technology Leadership
2019
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Background and Company Performance

Industry Challenges

The Internet of Things (IoT) promises superior organizational efficiency, fast and smooth communications, and deeper insights into performance metrics for enterprises. Over recent years, enterprises have significantly increased adoption of IoT devices in day-to-day operations; a recent Frost & Sullivan study estimates that there will be nearly 25 billion connected devices globally by the end of 2019. In particular, building automation systems (BAS), security, and surveillance devices together will generate revenue of $13.36 billion by 2019.

However, enterprises often overlook the security gaps accompanying IoT devices. A new study by network security firm Zscaler analyzed 56 million IoT device transactions from 1,051 enterprises for a month. The study findings reveal that over 40% of IoT devices present on enterprise networks did not encrypt their traffic. Such a huge void in security puts enterprises at the risk of exposure to Man-in-the-Middle (MITM) attacks and gives cyber adversaries an opportunity to gain access to the network.

The security risk is particularly significant for commercial buildings since about 53.5% of IoT devices are used in Building automation, security, and surveillance. Many traditional operational technology (OT) systems such as elevators, HVAC systems, Point of Sale (PoS) machines, lighting, IP Cameras, and access control machines have acquired smart capabilities and communicate with other devices in the network. In the past, a building manager might post a notice instructing employees to not use elevators in case of a fire. Today, smart capabilities of these devices enable automatic shutdown of elevators in case of fire. Traditional security systems are incapable of securing these smart OT devices, necessitating the use of a converged OT/IT security system.

Today, more often than not, converged OT/IT security for building systems translates to Building Automation System (BAS) security. IT/OT security solutions seldom provide complete visibility of all devices connected to the network, irrespective of the nature, function, and characteristics of the device. For instance, building security systems in hospitals may not have visibility of the medical devices connected to the network owing to interoperability issues.

A converged IT/OT network necessitates a single view of all devices and data exchanged in the network. Many smart buildings have open ports that can be easily accessed by cyber adversaries to infiltrate the network. A quick search for BAS or any IoT device in search engines such as Censys or Shodan can enable cyber adversaries to gain access to the network.

Lack of visibility into systems and devices is a major security concern for enterprises. For instance, a building owner may outsource equipment maintenance and operations to a systems integrator or manufacturer for remote maintenance. In such cases, if the building owner does not have visibility into the activities of the third party system integrator, the enterprise faces supply chain attack risk.

Few vendors offering IT/OT security for smart buildings are capable of providing complete visibility of all devices, systems, equipment, communications, and data traffic. Network
visibility should extend beyond networks and IT devices to include communication between IT and OT subsystems.

**Technology Leverage and Customer Impact**

Forescout Technologies is one of the leading providers of converged IT / OT cybersecurity solutions. The US headquartered company has 1,116 employees and serves enterprises across all verticals, globally.

**Visibility beyond the network**

Forescout’s solution provides threat intelligence and cybersecurity for building automation system from two dimensions – visibility and security. The company enables its customers with real-time identification, classification, assessment, and control of IT, IoT, and OT devices in the enterprise network.

Building managers often have limited visibility of the devices connected to the network and its operations despite having a security solution in place. Forescout’s solution provides full device visibility by leveraging the information coming from network and protocol level. The solution enables the enterprise to characterize and classify all the devices to take a complete inventory on the network, providing a real-time view of the assets.

The company installs hardware on premise to monitor data exchanged at the protocol level. Initially, the solution creates a baseline of all device activities. Subsequently, Forescout leverages patented deep packet inspection (DPI) anomaly detection technology and a library of over 2,100 ICS-specific threat indicators to detect anomalous activity throughout network communications, while simultaneously using threat intelligence to proactively detect cyber threats.

Forescout differentiates from its competitors through its ability to understand major BAS protocols and to identify a variety of nested devices – including both IT and OT devices. The solution understands and supports not just major protocols such as BACnet, Modbus, and LonTalk but equipment from leading vendors such as ABB, Siemens, Honeywell, and Johnson. The solution tracks any new host or communication detected on the network to understand the nature of the device down to the detail of device model, firmware, module, OS, network user behavior, software, and applications.

Enterprises value Forescout’s products due to its ability to provide an operational view of the network in addition to asset inventorying and threat monitoring. For instance, nested devices are often represented by the same ID in the network due to misconfiguration during initial deployment. Consequently, building management systems do not have the right characterization of each device’s behavior leading to lack of visibility. Forescout’s solution addresses this issue through its ability to understand multiple protocols.

**Sustained Growth Fueled by Innovation**

Forescout’s product capabilities are the result of the company’s strong research and development focus. The company has seven US patents and a total of 38 pending patent applications both inside and outside the US. For instance, Forescout has conducted extensive research to understand the threat landscape in building automation.
environments. The company spent 6 months developing malware to deliver a targeted attack on building automation networks. The research demonstrates how a cyber adversary or an unauthorized person can enter an access restricted network through networked devices such as IP cameras or elevators to inject malware into the network core or shut down systems.

Forescout’s R&D team is backed by a strong team of engineers. The company relies on a focused hiring process to source talented professionals who align with its organizational culture, thus enabling a productive work environment. Forescout’s R&D team is spread across Israel, California, the Netherlands, and Texas.

Often, companies invest equally in new product development across all product lines. This might lead to battle for resources to commercialize all the products. In the long run, the strategy becomes unsustainable leading to drop in investments in innovation. Forescout, with its phased process, takes advantage of market movers and ensures sustained innovation – this has helped the firm to achieve an average of 33% YoY growth rate between 2015 and 2018. The innovation process allows Forescout to deliver an updated product line in two to three years, thus staying up to date with market needs and trends.

Forescout actively looks out for applications and use cases outside the traditional boundaries of its solution. For instance, merger and acquisition due diligence examination should include understanding the security posture of the target company before integrating the assets post acquisition. Forescout leverages its solution’s asset inventorying capabilities to take stock of the assets and offer greater visibility.

In addition, Forescout recently acquired SecurityMatters, a Netherlands-based company specializing in OT device detection, monitoring, and network protection. This strategic acquisition enables Forescout to focus on extending its OT security capabilities with its new team of innovators and researchers.

**Building Trust and Loyalty**

Forescout employs multiple strategies to ensure superior customer engagement and satisfaction. Forescout offers various customer services, ranging from initial set up services to assigning dedicated on-site personnel. The company also offers its customers a quarterly or a semi-annual security health check. In addition, Forescout has a formal training and certification program for delivery partners, resellers, and end customers to increase awareness and facilitate proficient use of its technology.

Furthermore, Forescout has a customer advisory board and technical advisory board to assist customers with risk posture assessment and improvement. The company has a customer portal to enable interaction for enterprises. The company follows a formalized process to collect feedback from customers on a variety of topics. Customers can input their feedback and satisfaction levels after every engagement. The feedback is made available to all employees from executive managers to individual product heads to help improve customer experience. Forescout has consistently achieved an impressive 74% Net promoter Score (NPS).
Forescout believes in keeping the customers well informed of security trends and issues so that they can make well informed decisions. In addition, the company shares its research findings with its customer base every two months. This enables CISOs to brief their top management and make better security decisions.

**Conclusion**

Enterprises implementing connected workspaces are concerned about cybersecurity attacks from the ever-expanding attack surface. Building owners are crippled by lack of complete visibility on devices and activities in the network. Forescout’s solution offers deep visibility of assets and network behavior based on its patented DPI technology. In addition, the company continues to offer superior customer experience with a relentless focus on innovation and customer satisfaction.

With its strong overall performance, Forescout has earned Frost & Sullivan’s 2019 Enabling Technology Leadership Award.
Significance of Enabling Technology Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. In a sense, then, everything is truly about the customer. Making customers happy is the cornerstone of any successful, long-term growth strategy. To achieve these goals through enabling technology leadership, an organization must be best in class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Enabling Technology Leadership

Product quality (driven by innovative technology) is the foundation of delivering customer value. When complemented by an equally rigorous focus on the customer, companies can begin to differentiate themselves from the competition. From awareness, to consideration, to purchase, to follow-up support, organizations that demonstrate best practices deliver a unique and enjoyable experience that gives customers confidence in the company, its products, and its integrity.
**Key Benchmarking Criteria**

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated Technology Leverage and Customer Impact according to the criteria identified below.

**Technology Leverage**
- Criterion 1: Commitment to Innovation
- Criterion 2: Commitment to Creativity
- Criterion 3: Stage Gate Efficiency
- Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

**Customer Impact**
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

**Best Practices Award Analysis for Forescout**

**Decision Support Scorecard**

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

**RATINGS GUIDELINES**

![Rating Scale](image)

The Decision Support Scorecard considers Technology Leverage and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.
The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, Frost & Sullivan has chosen to refer to the other key participants as Competitor 1 and Competitor 2.

<table>
<thead>
<tr>
<th>Enabling Technology Leadership</th>
<th>Technology Leverage</th>
<th>Customer Impact</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forescout</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Competitor 1</td>
<td>8</td>
<td>7</td>
<td>7.5</td>
</tr>
<tr>
<td>Competitor 2</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

**Technology Leverage**

**Criterion 1: Commitment to Innovation**
Requirement: Conscious, ongoing adoption of emerging technologies that enable new product development and enhance product performance.

**Criterion 2: Commitment to Creativity**
Requirement: Technology leveraged to push the limits of form and function in the pursuit of white space innovation.

**Criterion 3: Stage Gate Efficiency**
Requirement: Adoption of technology to enhance the stage gate process for launching new products and solutions.

**Criterion 4: Commercialization Success**
Requirement: A proven track record of taking new technologies to market with a high rate of success.

**Criterion 5: Application Diversity**
Requirement: The development and/or integration of technologies that serve multiple applications and can be embraced in multiple environments.

**Customer Impact**

**Criterion 1: Price/Performance Value**
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

**Criterion 2: Customer Purchase Experience**
Requirement: Customers feel they are buying the optimal solution that addresses both their unique needs and their unique constraints.

**Criterion 3: Customer Ownership Experience**
Requirement: Customers are proud to own the company’s product or service and have a positive experience throughout the life of the product or service.

**Criterion 4: Customer Service Experience**
Requirement: Customer service is accessible, fast, stress-free, and of high quality.
**Criterion 5: Brand Equity**
Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

**Decision Support Matrix**
Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.

![Decision Support Matrix](image-url)
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and assess their fit with select best practices criteria. The reputation and integrity of the awards are based on close adherence to this process.

<table>
<thead>
<tr>
<th>STEP</th>
<th>OBJECTIVE</th>
<th>KEY ACTIVITIES</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monitor, target, and screen</td>
<td>Identify award recipient candidates from around the world</td>
<td>Conduct in-depth industry research, Identify emerging industries, Scan multiple regions</td>
</tr>
<tr>
<td>2</td>
<td>Perform 360-degree research</td>
<td>Perform comprehensive, 360-degree research on all candidates in the pipeline</td>
<td>Interview thought leaders and industry practitioners, Assess candidates’ fit with best practices criteria, Rank all candidates</td>
</tr>
<tr>
<td>3</td>
<td>Invite thought leadership in best practices</td>
<td>Perform in-depth examination of all candidates</td>
<td>Confirm best practices criteria, Examine eligibility of all candidates, Identify any information gaps</td>
</tr>
<tr>
<td>4</td>
<td>Initiate research director review</td>
<td>Conduct an unbiased evaluation of all candidate profiles</td>
<td>Brainstorm ranking options, Invite multiple perspectives on candidates’ performance, Update candidate profiles</td>
</tr>
<tr>
<td>5</td>
<td>Assemble panel of industry experts</td>
<td>Present findings to an expert panel of industry thought leaders</td>
<td>Share findings, Strengthen cases for candidate eligibility, Prioritize candidates</td>
</tr>
<tr>
<td>6</td>
<td>Conduct global industry review</td>
<td>Build consensus on award candidates’ eligibility</td>
<td>Hold global team meeting to review all candidates, Pressure-test fit with criteria, Confirm inclusion of all eligible candidates</td>
</tr>
<tr>
<td>7</td>
<td>Perform quality check</td>
<td>Develop official award consideration materials</td>
<td>Perform final performance benchmarking activities, Write nominations, Perform quality review</td>
</tr>
<tr>
<td>8</td>
<td>Reconnect with panel of industry experts</td>
<td>Finalize the selection of the best practices award recipient</td>
<td>Review analysis with panel, Build consensus, Select recipient</td>
</tr>
<tr>
<td>9</td>
<td>Communicate recognition</td>
<td>Inform award recipient of recognition</td>
<td>Present award to the CEO, Inspire the organization for continued success, Celebrate the recipient’s performance</td>
</tr>
<tr>
<td>10</td>
<td>Take strategic action</td>
<td>Upon licensing, company is able to share award news with stakeholders and customers</td>
<td>Coordinate media outreach, Design a marketing plan, Assess award’s role in strategic planning</td>
</tr>
</tbody>
</table>
The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan’s 360-degree research methodology represents the analytical rigor of the research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation, and leadership. The company’s Growth Partnership Service provides the CEO and the CEO’s growth team with disciplined research and best practices models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan’s Growth Partnership, visit http://www.frost.com.