Computing on the Edge: Survey Highlights

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technalysis
RESEARCH
Methodology

- Online survey of 600 US-based individuals
  - 48% came from medium-sized companies
  - 52% came from large enterprises
- Respondents involved with Edge Computing
  - Departments include IT, Operations, and more
- Industries include Technology, Manufacturing, Health Care, Finance, and more
Edge Computing Understanding Still a Bit “Foggy”

- No clear agreement on what it is
- More people expect endpoints than gateways, but over 44% believe it’s both

What is Edge Computing?

- The collective of all end-devices connected to the Internet or dedicated network: 44.3%
- The collective of all access nodes to the Internet or dedicated networks: 13.2%
- The sum of the two above: 29.8%
- The last node/device in which a network operator or administrator has control: 12.7%
Edge Computing Goals

- Improving efficiencies, increasing security, reducing costs, and improving processes are key goals for edge computing efforts.
- The potential to bring new computing capabilities to an organization is also recognized as a Top 5 goal.
Edge Computing Challenges

- Complexity and costs still major barriers to adoption for edge computing
- Concerns about opening new security issues also very real
- Despite potential, defining a clear ROI for many edge computing efforts remains a challenge
Edge Computing Devices

- Traditional clients, such as PCs, still seen as the primary edge devices
- Gateways, dedicated routers and servers are also fairly widely deployed
Top Edge Computing Workloads

- Security and network management are top workloads, suggesting more traditional network perimeter monitoring efforts are still prevalent.
- For sensor-based data collection and analysis, more companies doing local analytics than external.

<table>
<thead>
<tr>
<th>Workload</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Security</td>
<td>62%</td>
</tr>
<tr>
<td>Network Traffic Management</td>
<td>59%</td>
</tr>
<tr>
<td>Sensor Data Collection and Local Analytics</td>
<td>41%</td>
</tr>
<tr>
<td>Data Colection and External Analytics</td>
<td>39%</td>
</tr>
<tr>
<td>Automation Management and Control</td>
<td>32%</td>
</tr>
<tr>
<td>Connected Application Acceleration</td>
<td>30%</td>
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<tr>
<td>Connected Application Optimization</td>
<td>27%</td>
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</table>
Edge Computing Applications

- Analyzing operations and monitoring processes, people and assets lead the list of specific applications.
- Related safety applications for people and devices are also popular.
Edge Applications and Cloud Applications Strongly Connected

Only a minority of edge applications are completely new.
New EDGE APPS vs. MIGRATED CLOUD APPS

39% New Apps

Top 5 Reasons for App Migration
- Improve Security
- Reduce Costs
- Reduce Latency
- Improve Local Control
- Reduce Network Traffic

New Apps vs. Migrated Apps
- New for Edge Devices: 39%
- Partially Migrated from Cloud: 24%
- Completely Migrated from Cloud: 37%

EDGE COMPUTING APPS
61% Migrated From Cloud

Technalysis Research
Analytics Work for Edge Computing is Diverse

More still done in data center than on edge devices
EDGE ANALYTICS LOCATIONS

36% In Data Center

34% On Edge

29% In Cloud

Top 5 Data Types Analyzed

- Usage Data
- Network Traffic
- Location Data
- Device Status Data
- Environmental Data
IT Dominates Edge Computing Efforts

Tech vendors still playing an important role, however
EDGE DEVICE MANAGEMENT

87% Done by IT
9%  Done by OT
3% Done by Line of Business

CURRENT EDGE COMPUTING PARTNERS

31% Hardware Tech Vendors
Core Technologies Used For Edge Computing

Despite the hype, both AI and containers only used by a small percentage of respondents.

Technologies Used

- Software as a Service (SaaS): 61%
- Virtualization: 55%
- Platform as a Service (PaaS): 35%
- Machine Learning/Al: 25%
- Containers: 20%
CLOUD PLATFORMS USED WITH EDGE COMPUTING

30% Use Microsoft Azure

Top 3 Reasons for Using Cloud Platform

- Cloud is used to manage the edge devices
- Edge is used to deliver cloud services to end users/devices
- Edge devices used to help connect end user devices to the cloud

Top 5 Cloud Platforms for Edge Computing

<table>
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<tr>
<th>Platform</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Microsoft Azure</td>
<td>30%</td>
</tr>
<tr>
<td>Google Cloud</td>
<td>14%</td>
</tr>
<tr>
<td>Amazon AWS</td>
<td>10%</td>
</tr>
<tr>
<td>IBM Bluemix</td>
<td>5%</td>
</tr>
<tr>
<td>SAS</td>
<td>2%</td>
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</tbody>
</table>

Top 5 Cloud Platforms for Edge Computing:

- Microsoft Azure
- Google Cloud
- Amazon AWS
- IBM Bluemix
- SAS

14% Don’t Use Any Cloud Platform
Current Edge Connectivity

- Traditional methods dominate
- Long tail of varied choices
- Only two have more than 10% adoption

- Paid cellular connections used for both mobile and fixed applications

Paid Cellular Usage
- 24% Mobile Applications
- 31% Fixed Applications
- 45% Won't Use
Future Edge Connectivity

• Within 3 years, 5G is expected to become the third most common connectivity choice
• Long tail of varied options will remain, however, creating challenges and complexity issues
Edge Computing Purchase Factors

- Security strongly outweighs other factors when making purchase designs for edge computing applications
- Cost barely makes the top 5 as more practical issues are key factors
41% Prefer Working With Multiple SIs

Edge Computing Purchase Preferences

- 41% Work with multiple system integrators or ISVs to buy the right devices for my ecosystem
- 36% Buy integrated IoT solutions from a single vendor or as few vendors as possible
- 24% Buy individual devices from multiple manufacturers

Top 5 Edge Computing Device Purchases

- PCs
- Dedicated Edge Servers
- Dedicated Edge Routers
- Gateways
- Connected Sensors

PLANNED EDGE COMPUTING PURCHASES

62% Plan to Purchase Edge Servers
52% Plan to Purchase Edge Routers
Final Thoughts

- Edge computing still in early stages, being adopted primarily by companies with advanced technology skills
- Enormous diversity of workloads and applications being done across a variety of different edge devices
- Many types of analytics work being done, but focused on most practical issues first
- While ROI is important for edge, security, safety and monitoring of critical business elements are key
- Physical proximity benefits offered by edge computing will be an important factor in its growth
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For additional information and complete survey results, a 104-slide version of this report is available.