Modern retail at the edge
Directions for 2023 and beyond
Executive summary

Edge computing is emerging as a powerful way to catapult retail enterprises to the next level of digital engagement.

Shifting business models and customer expectations are driving modern retailers to accelerate their digital transformation. Why? Because modern retailers are noticing the need for flexible tools that support agility, enrich knowledge, and reduce risk across public and private environments.

But how will retailers obtain new insights and deliver better digital experiences to their customers? Google Cloud partnered with Omdia on a joint study to understand how retail enterprises plan to use edge computing.

Discover new insights examining:

- Size, scope and scale of edge investment to date
- How edge services are expected to create new value
- Which use cases are live or planned
- Barriers to adoption
- Industry snapshots
- Five key factors to consider for edge computing success

**Geography**

- **Americas**
  - US
  - Brazil
- **Europe**
  - France
  - Germany
  - UK
- **Asia**
  - Australia
  - Japan
  - Singapore

**Firmographics**

- **Turnover** $100M to $10BN+
- **Employees** 500 to 10,000+

**People (112)**

- **Business leaders**
  - Executive, line of business
- **Tech Leaders**
  - IT and operational technology
Retail Industry Snapshot
The current status of edge across retail

- 50% use a form of edge
- ~1/3 plan to invest within a year
- 50% plan to use locally-hosted edge solutions
## Areas targeted for transformation

<table>
<thead>
<tr>
<th>Top transformation preferences:</th>
<th>Top transformation challenges:</th>
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<tbody>
<tr>
<td>Customers create their own products and services</td>
<td>Operational efficiency</td>
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<tr>
<td>Entry to locations is seamless</td>
<td>Employee productivity</td>
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<tr>
<td></td>
<td>Employee skills</td>
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<td>Employee safety</td>
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Where, and how, is retail investing in edge?

**Edge budget ownership:**
- Most likely in network budget
- ~33% in digital transformation budget
- <20% under cloud budget

**Expected yearly edge spend:**
- 25% expect to spend $1,000,000+
- 60% expect to spend $100,000+
Current and predicted edge infrastructure

- **48%**
  - have 2-4 edge sites

- **25%**
  - expect to expand to 10+ edge sites

- **70%**
  - say a campus network upgrade is essential
Retailers will lean on cloud and hosted service providers for edge

- 48% cite cloud or hosting service providers as the most preferred edge partners.
- 11% cite telco as a primary edge partner.

Requested skills include:
- Integration
- Implementation
Insight on internal operations is a bigger driver for edge than creating new customer engagement.

Edge must deliver on **efficiency benefits** to justify investment.

It’s key to select a partner with the right experience and expertise.

*Implications across retail*
Retail Edge
Computing Survey
The edge market continues to mature

7 out of 10 enterprises expect to invest in edge within the next 12 months.

Efficiency gains and improved safety are near term investment drivers while new customer experiences lead long term ambitions.

Top edge barriers to adoption: Internal alignment and expert partners.

Experimentation and validation
To 2021

How edge is used
Edge trials explore different outcomes across industries.

Recovery and control
2021 - 2022

How edge is used
Enterprise focus on uses that get their business (and network in better shape).

Innovation and disruption
2023+

How edge is used
Enterprises build on greater insight and control over their environments to innovate.

Edge computing matures to support new experiences.
Edge computing is quickly becoming mainstream

**Industries are buying into edge**

It’s not a question of who will deploy edge but when and with whom.

Almost **70%** of enterprises expect to have deployed a form of edge **within the next 12 months**

Edge computing among retailers: 50% use today and 27% plan to use in the next 12 months.
Better efficiency and safety are top goals of retail edge investment

Key outcomes driving investment in analysis of 35+ edge use cases

- **Efficiency**: Help remote/field workers respond
- **Compliance**: Identify and fix problems faster
- **Insight**: Access to real-time situational data and intelligence to improve decision making and response

Is your organization using or considering the use of edge computing to address your greatest challenges?

- 21% Engagement
- 17% Efficiency
- 13% Sustainability
- 13% Security
- 9% Innovation
- 9% Inventory control
- 6% Distribution
- 12% Productivity
Enterprise network organizations are leading edge efforts

Edge computing is part of a wider transformation

Almost 50% say edge computing is part of a networking / connectivity transformation initiative

One third say edge computing is part of an enterprise-wide digital transformation initiative

One fifth say edge computing is part of a standalone project for a specific line of business department

How is edge computing planned in your organization?

- Part of an enterprise-wide digital transformative initiative
- Part of a network transformative initiative
- A standalone project for a specific line of business department
Edge dollar investment is increasing in retail

Manufacturing clearly sees the edge opportunity, but others closely follow

Manufacturing, Healthcare and Retail firms are anticipating the biggest initial spends.

70% of all firms expect to spend $100k or more on edge during the first 24 months of deployment.

Close to a quarter of all industries are prepared to spend a $1 million or more.

How much do you expect to invest in edge computing hardware, software, managed and professional services during the initial 24 months of deployment?
Regardless of size, retail enterprises are investing in edge computing

**Midmarket retail enterprises are the sweet spot for edge computing services**

Midmarket enterprises are making significant edge investments: *Two thirds expect to spend $100k or more* in their first 24 months.

Large enterprises are heavily investing in edge: *Nearly one fourth expect to commit at least $1 million* in the first 2 years of their edge deployment.

Small enterprises are *investing proportionally* in edge.

**How much do you expect to invest in edge computing hardware, software, managed and professional services during the initial 24 months of deployment?**

![Investment Amounts Graph](chart)

- For 5000+ employees, the investment distribution ranges from 0% to 100% in the $1m+ category.
- For 1000 to 4999 employees, the distribution is similar, with most in the $500k to $999k range.
- For 500 to 999 employees, the distribution also shows significant investment in the $500k to $999k range.
Retail enterprises are prioritizing a new era of transformation

Personalization and seamless checks to enter a venue or travel are top priorities

Small deviations occur between the highest and lowest ranked concepts, indicating that multiple drivers could emerge

The edge pitch must be nuanced to address immediate concerns as well as transformational goals

Which of these concepts could be most transformational for your organization?

- Customers designing their own products and services: 19% (Rank 1), 13% (Rank 2)
- Seamless health, security, and identity checks to enter a venue or travel: 17% (Rank 1), 13% (Rank 2)
- No more queuing to make a purchase, just pick and go: 14% (Rank 1), 13% (Rank 2)
- Customers creating and controlling their own viewing experiences: 12% (Rank 1), 14% (Rank 2)
- Live, end-to-end visibility of our global supply chain: 12% (Rank 1), 13% (Rank 2)
- Anticipating problems / threats before they happen: 9% (Rank 1), 13% (Rank 2)
- Risk analysis and mitigation in real time: 12% (Rank 1), 10% (Rank 2)
- Using machines that operate and adapt on their own: 7% (Rank 1), 12% (Rank 2)
Real-time insights from cognitive analytics are driving retail edge computing adoption

Enterprises are ramping investments in planned deployments

Business intelligence deployments will more than double in the next 12 months

IoT/data collection and surveillance cognitive analytics are the most widely deployed and planned

What is or what do you expect to be the primary function of your organization’s edge computing applications?

<table>
<thead>
<tr>
<th>Function</th>
<th>Deployed</th>
<th>Planning to deploy next 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual processing/cognitive analytics for surveillance</td>
<td>16%</td>
<td>13%</td>
</tr>
<tr>
<td>IOT/Data collection</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Enterprise software applications</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Media/content aggregation, processing, distribution</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Data/content storage, site mirroring, backup</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>OT controllers</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Visual processing/cognitive analytics for transactions</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>BI/automation</td>
<td>7%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Improving safety and efficiency are important issues for many industries.

Motivations to invest in edge are unique to each industry.

Monetization is not a dominant priority across any industry.

Is your organization using or considering the use of edge computing to address the following issues?

- Safety: 35%
- Efficiency: 5%
- Insight: 10%
- Compliance: 30%
- Engagement: 20%
- Monetization: 25%

Triggers for edge investment vary by industry.
Vendor lock in ranks lowest, signaling broad acceptance of edge computing

Many retail enterprises say they don’t have the right skills to deploy edge computing.

Retail enterprises perceive a gap with respect to technology partners’ edge offerings.

Technology standards are not seen as the top barrier to edge computing adoption.

What are the biggest barriers to the uptake of edge computing in your organization?

- Key technology partner does not offer edge services: 18% (Rank 1), 19% (Rank 2)
- Lack of internal skills about edge computing: 12% (Rank 1), 16% (Rank 2)
- Perceived high or unpredictable costs: 10% (Rank 1), 15% (Rank 2)
- Cybersecurity and data protection risks: 6% (Rank 1), 8% (Rank 2)
- Fear of vendor lock in: 6% (Rank 1), 7% (Rank 2)
- Immature technology standards: 6% (Rank 1), 7% (Rank 2)
Managed edge services is the desired consumption model for retailers

7 out of 10 retailers expect to buy managed edge services

Some enterprises have heard a few third-party service pitches
Others are seeking them – typically from a preferred technology partner
Consideration of hosted options is high for an early stage market

What type of edge computing deployment are you using / considering?

<table>
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<tbody>
<tr>
<td>Compute</td>
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<tr>
<td>AI/ML</td>
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<tr>
<td>Google Distributed Cloud</td>
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<tr>
<td>Google’s network edge</td>
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</tbody>
</table>

Managed service
Next steps
# Take your retail business to the next level

## How Google Cloud can help

Google Distributed Cloud Edge brings Google Cloud’s infrastructure and services closer to where data is generated. Modern retailers can benefit from more secure and uninterrupted operations, increased operational efficiencies, better insights, and a robust ecosystem of partners equipped to build end-to-end retail solutions.

<table>
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<tr>
<th>Scale</th>
<th>Time to market</th>
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<tbody>
<tr>
<td>Simplified edge infrastructure management</td>
<td>Agility in deployment</td>
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</table>

<table>
<thead>
<tr>
<th>Ecosystem</th>
<th>Operations</th>
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<tbody>
<tr>
<td>Google 1P and ISVs</td>
<td>Increased efficiencies</td>
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