



SLI Advanced Technology and Infrastructure Overview

Smarter Site Search Solutions
to Accelerate E-commerce

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Improve the Shopping Experience with Better Search

As an online retailer, you provide shoppers with more than a catalog of products. You may publish how-to guides, product videos, blogs and a stream of social media posts. You're enlisting customers to share personal stories about your brand and encouraging them to provide product ratings and reviews on your site. At the same time, your product catalogs are growing and becoming more complex.

Today shoppers have high expectations, and your site needs to deliver a rich, sophisticated experience that meets their demands. Your site must be mobile-friendly. It needs to support periods of peak shopping activity and spikes in traffic. And your site search and navigation must always provide shoppers with the most relevant results. You need a hosted e-commerce site search solution that has proven to be reliable, scalable and dedicated to your site's success.

This paper describes why SLI Systems — with its long history of forward-thinking solutions and reliable SaaS-based infrastructure — is the best choice for accelerating your e-commerce.

Site Search That Is IT-friendly and Quick to Deploy

Launching a new site search solution doesn't have to be stressful or time intensive for your IT department. SLI requires minimal IT resources and makes it possible to launch a new site search in weeks, not months.

An SLI Customer Success Manager works with you to ensure smooth and timely deployment of your e-commerce solutions. As the implementation manager, your CSM serves as an extension of your IT team and guides you in preparing your product catalog data feed.

Although most customers already have a vision for how they want their search to look and function, your CSM will share expert advice and provide key insight to create a premium search experience and increase the ROI from your SLI solutions.

Your CSM will monitor the performance of your site search and suggest ways to improve results. Our team's extensive knowledge includes best practices for improving [site search](#), [navigation](#), [merchandising](#), [mobile](#), [recommendations](#) and [SEO](#).

Partnership with SLI means less work for your IT team, fewer headaches and faster deployment.

The Product Catalog

The first step to implementing SLI Learning Search® is providing SLI with your product catalog. Your Customer Success Manager will help determine which product attributes shoppers will want to use for search refinements. Typically, this includes product name, description, price, image URL and linking URL, as well as brand, model, size, color, stock status, merchandise category, product ratings and anything else that shoppers are likely to use in their searches. This information is foundational for creating a great search experience, and it allows customers to refine their search with simple checkboxes or drop-down menus.

Most customers set up their final product catalog data feed as an XML file. We will keep your indexed data on SLI servers and it can be updated automatically as often as needed.

Non-Product Information

Content from blogs, product videos, reviews, social media, etc. is an integral part of the customer experience. It contains answers to product questions, expressions of delight with service and reasons why one product was purchased over another. In short, it contains the sort of information that moves customers along the shopping journey from consideration to purchase. Learning Search® allows you to easily make all of your content part of the site search experience.

SLI collects and indexes content from multiple sources and in a variety of formats, such as XML or CSV. SLI can gather information automatically or receive RSS feeds from sites where you have an online presence, like Instagram, YouTube, Facebook and Twitter. The data-collection process transforms each type of content into a set of documents rich with useable metadata. Your Customer Success Manager helps identify all relevant sources of content and how best to gather it. As a result, your shoppers find the products they want along with all the information they need to make a decision.

How to Use Creative Content to Convince Online Shoppers to Buy

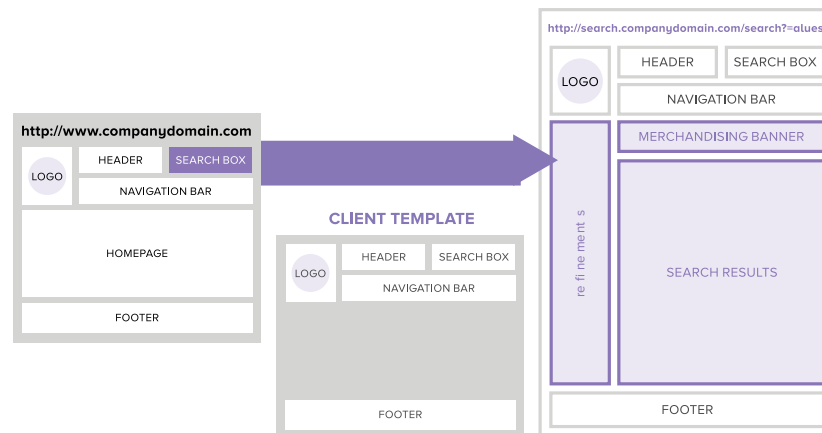
Download e-book:
sli-systems.com/creativecontent

Dynamic Search Results Pages

SLI e-commerce solutions seamlessly integrate with your website while you continue hosting the home page, product pages and cart. When shoppers enter their queries in the search box, an intelligent DNS system redirects them to search results pages hosted by SLI.

Using your templates, the dynamic search results pages maintain the same look and feel as the rest of the site. The templates dynamically display the site's header, logo, footer and any fixed navigation or promotional sections. SLI Systems serves up the search results, refinements and merchandising banner. If you are using SLI Learning Navigation®, we will also return the navigation menu.

SLI Systems supports multiple optional page templates, which are maintained by the retailer. Retailers can choose which templates are displayed for all searches or specific search phrases. The SLI template engine periodically fetches these templates to check for changes and makes automatic updates as necessary.



SLI search results pages are based on client templates.

Merchandising Strategies to Drive Online Revenue

Download white paper:
sli-systems.com/merchandising

Within the SLI Merchandising Console, you can easily custom-tailor search results pages with HTML banners. Banners are an effective tool for promoting brands, sales or special offers such as free shipping. You can change banners as often as needed. This is just one way we empower your merchandisers without burdening your IT department.

In addition, we can incorporate API calls into the search results to pull in the latest pricing and inventory information. We can also integrate Add to Cart buttons so that items can be purchased directly from your search results pages.

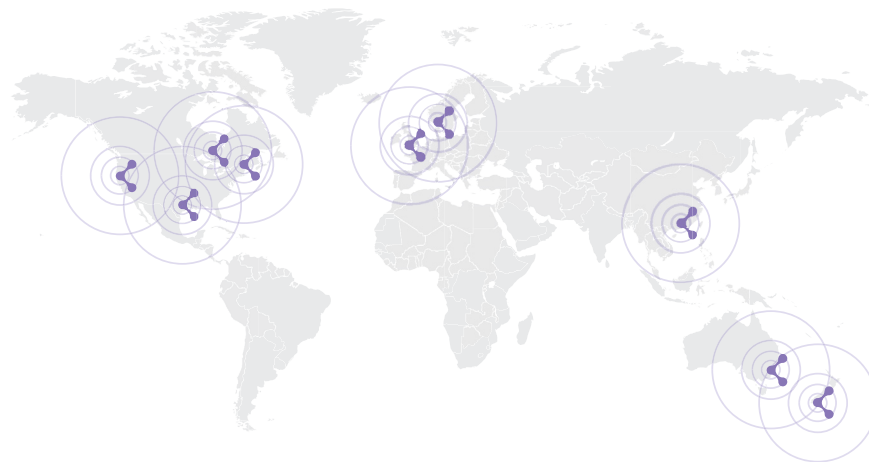
Staging Environment

Site search results pages are built and hosted in a staging environment where you can monitor progress and provide feedback to your Customer Service Manager. This also ensures that everything can be reviewed and tested before it is made available to the public. Once the site search is launched, the staging environment is used to make future design and user-interface changes. New site search features are also safely tested in this environment.

The SLI Systems Multi-level Redundant Infrastructure

SLI's reputation of high performance and proven uptime is supported by multiple redundant servers in nine data centers located around the world. Every client is hosted at multiple geographically separated data centers. Our infrastructure is used only to a fraction of its capacity to allow for increased demands during peak shopping periods or other unanticipated incidents, such as natural disasters. This provides a level of reliability that, along with the scalability of our SaaS platform, makes SLI an ideal fit for large, high-traffic sites.

SLI System's multi-level redundant infrastructure eliminates any single point of failure. Our infrastructure includes multiple data centers managed by a global load balancer and a redundant architecture within each of the data centers managed by a local load balancer. This multi-level redundancy ensures search traffic is funneled only to healthy servers within healthy data centers.



NORTH AMERICA

SAN JOSE, CA
DALLAS, TX
CHICAGO, IL
SOMERSET, NJ

EUROPE

LONDON, UK
SLOUGH, UK

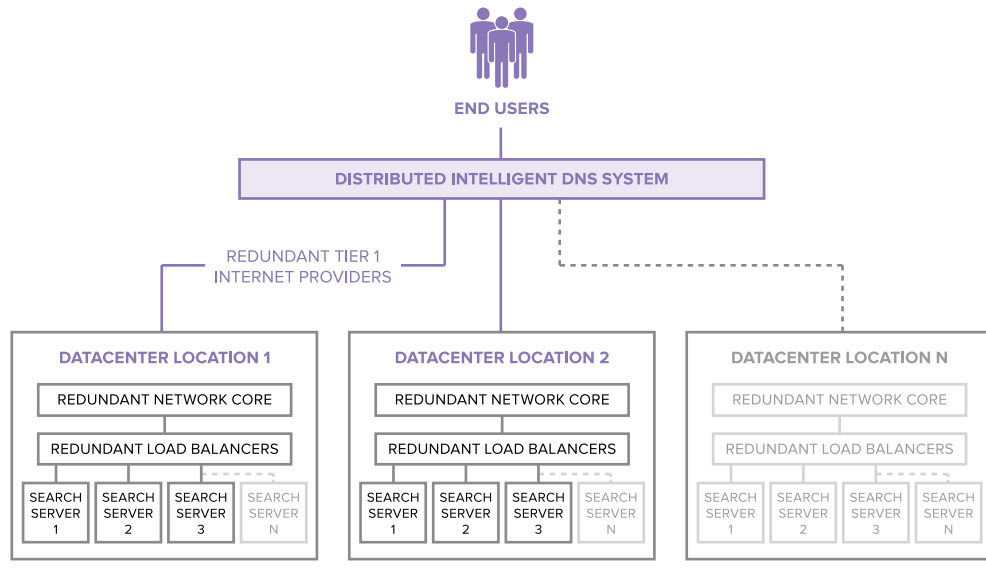
ASIA

CHRISTCHURCH, NZ
HONG KONG, CN

SLI Systems data centers are geographically distributed.

The global load balancer is provided by a globally distributed Tier1 DNS provider. The distributed intelligent DNS provider is equipped with a heart monitor that continuously probes SLI data centers to determine if a data center is down and provides the end-user browser with a list of possible IP addresses to execute the search request. The browser picks the IP address from one of the data centers. If there is a failure at any one of the data centers or with a network connection, the problem IP address is removed from the list, and the browser automatically sends the request to the next data center (IP address), ensuring end-users never experience a site search outage.

The figure below depicts the SLI global load balancing and data center architecture.



SLI multi-level redundancy and scalability ensures continual uptime.

As this graphic shows, each of the SLI Systems data centers is equipped with multiple, redundant server clusters that receive search requests distributed by the data center's load balancer. This load balancer is also equipped with a heartbeat monitor and constantly checks if the servers are up. In addition, the heartbeat monitor tests the speed and response time of each server. The load balancer stops requests when needed and redirects traffic to other servers based on detected failures or in order to balance and scale the request throughput.


Each data center is equipped with a redundant network core. Each network element is setup in a master/slave configuration, including equipment such as the boarder router, catalyst switch and the load balancer. If the master fails, the slave will take over.

Each server rack is equipped with dual power from independent power distribution units (PDUs). The data centers are powered by a redundant (N+1) design of uninterruptible power supplies using two separate commercial power feeds from two separate power grids. In the event of a failure from commercial power, redundant standby generators provide the final layer of protection.

Scalability

To ensure speed and reliability, a top-tier content delivery network (CDN) is used to deliver the content assets such as thumbnails, larger images, CSS templates and JavaScript files. The CDN mirrors these assets to accelerate their delivery to the end-users (your shoppers).

The CDNs allow scalability of bandwidth and hardware through a sophisticated shared infrastructure. The CDN provider chosen by SLI Systems maintains a robust and redundant worldwide network, which allows optimal delivery of these content assets. In other words, these assets do not really come from your servers but rather from the CDN cache.

 This model is completely seamless to end-users and allows online stores to be equipped with an infrastructure that does away with slow database queries and connections.

Each server in the data centers runs at very low capacity, ensuring more than enough overload capacity during peak shopping seasons or unforeseen disasters. The cost of ensuring this type of over-capacity with a smaller site search provider or installed software would simply be outrageous. IT departments are not typically equipped to efficiently handle high search volumes, as it would require over-committing hardware resources that would ultimately sit idle.

Security

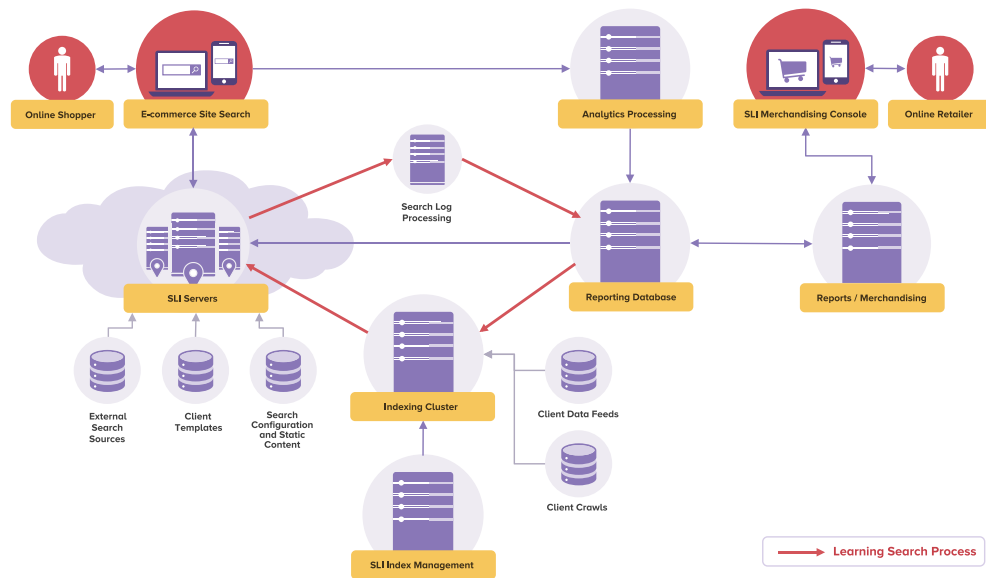
Each SLI server is loaded with the latest security management and anti-virus software to provide the most secure environment for our hosted services. The load balancers also ensure resilience to domain of service attacks at network nodes.

Monitoring

Each machine (servers and load balancers) is monitored to ensure it is online and running correctly. This is checked at least every minute. Your search is automatically queried every 15 minutes to ensure that it is returning results. Once per day, your search is queried by every common browser, checked for errors and a screenshot is stored. When a new index is created, it is compared to the previous index. If the index has changed significantly in size (typically by 10% or more), then the new index is not loaded and an email is triggered so we can check with you first.

If something does go wrong, it will typically be caught and fixed by us before there is any impact on your search. However, in the unlikely event that your search is unavailable for even a moment or two, we will always let you know. We will provide details on how long it was down, why it went down and what we're doing to ensure that it won't happen again.

Our dedication to continually search, learn and improve is at the heart of SLI Systems. This approach allows us to provide an incredibly reliable, scalable and innovative solution that is one of the most cost-effective systems on the market.



A high-level overview of how SLI site search technology works.

Advanced Reporting Engine

Our state-of-the-art reporting engine is designed to provide near real-time results. To accomplish this, we split our data store into separate sections – one that serves live search results and another for reporting. Then, we developed an analytics processing engine (APE) using hbase and mongodb technologies for scaling databases across multiple machines. With the flexibility and speed this technology offers, we are able to rapidly develop new reports and implement multivariate testing. We provide you with the power to create ad-hoc reports and gather unique insight into your site search activity and results. In addition, search pages can include third-party tracking codes for your preferred analytics provider.

Maintenance

As you should expect from a SaaS solution, all system maintenance and software upgrades happen automatically, with no hands-on involvement from you or your team. And with the built-in redundancy in our system architecture, your customers will never experience a system outage due to maintenance or code changes.

Next Steps: Choose a Site Search Solution that Learns, Scales and Offers the Ultimate Reliability

SLI Systems is the leading provider of site search, navigation, merchandising, mobile, recommendations and SEO solutions to top retailers around the world. Since 2001, we've been perfecting our patented learning engine and improving our customers' e-commerce profitability. Hundreds of customers worldwide have shared their analytics with us, revealing dramatic results since implementing SLI. It's common to see a range of benefits including more conversions, higher order values and increased time on site.

Benefits of SLI include:

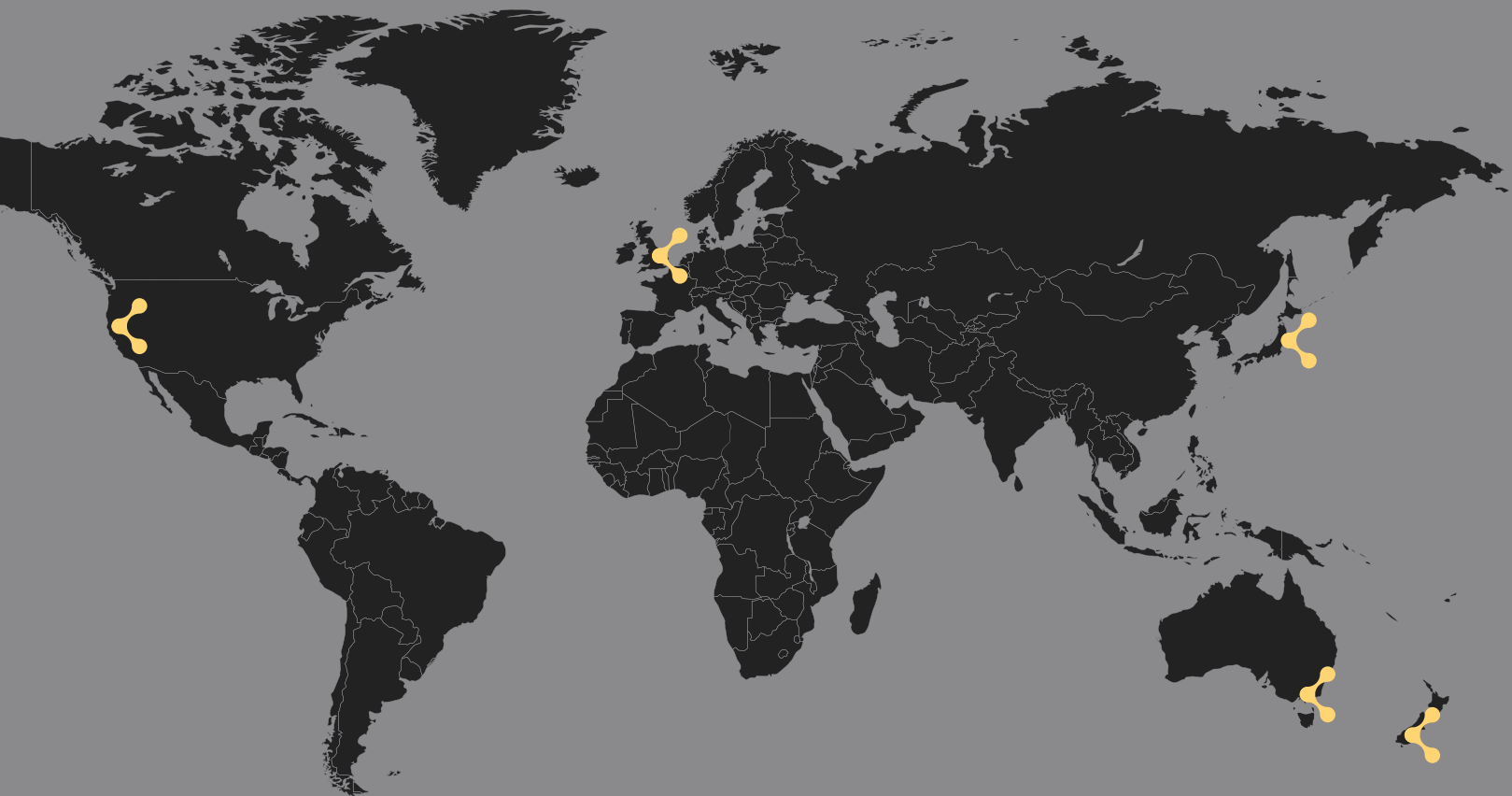
- As you provide the **ideal search and navigation experience** to your customers – whether on their PCs, tablets or smartphones – you build incredible **brand loyalty**
- With our **SEO solutions**, more of your products are found and purchased through organic search, spurring your business' **growth and profitability**
- Our **in-depth reporting** system provides you with data on what your visitors are looking for, what they are finding and what they are NOT finding on your site
- The **rich capabilities** of our Merchandising Console make it easy for you to promote, cross-sell and highlight specific brands or products so you can **quickly respond to the latest shopping trends**
- Our SaaS model allows us to deliver **fast rollouts** and **easy scalability** so your site stays at the forefront of current e-commerce trends
- Our Customer Success Managers proactively work to maximize your search and user experience, which **frees your time** to focus on other aspects of your business
- With our redundant servers in multiple data centers in different geographies, your site is **prepared for unexpected outages or traffic spikes**

For more than a decade, established brands around the world have trusted SLI Systems to deliver innovative features and knowledgeable service. SLI operates on more than 1,000 websites, has customers on five continents and supports at least 18 languages.

About SLI Systems

SLI Systems enables the world's leading e-commerce retailers to increase sales by connecting shoppers with the products they're most likely to buy. With proven search technology that learns from the activity of real site visitors, SLI delivers SaaS-based site search, navigation, merchandising, mobile, recommendations and SEO solutions that arm retailers with the tools they need for rapid growth.

To learn more visit sli-systems.com,
sli-systems.co.uk, sli-systems.com.au



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