SkyFoundry

Proven at Scale: SkyFoundry – The Platform Powering Enterprise-scale Deployments

Case Study
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SkySpark - The Platform Powering Enterprise-scale Deployments

With deployments across over 1 Billion sq. ft. now encompassing more than 20,000 buildings, SkySpark has proven itself in diverse applications including many of the largest analytic projects on the planet.

One of SkySpark's key differentiators is that the software can be deployed on-premise - inside the client's secure IT environment - **OR** offered as a cloud hosted solution. The ability to choose where and how to host the software and potentially sensitive operational data is critical to meet customer needs and is a key reason that SkySpark is so widely deployed.

The ability to implement a dedicated, on-premise instance of SkySpark, doesn't detract from SkySpark's ability to operate at enterprise scale, however. In fact, SkySpark is used in many of the largest analytics applications for the built environment. Let's review a few examples, starting with a few end-user clients →

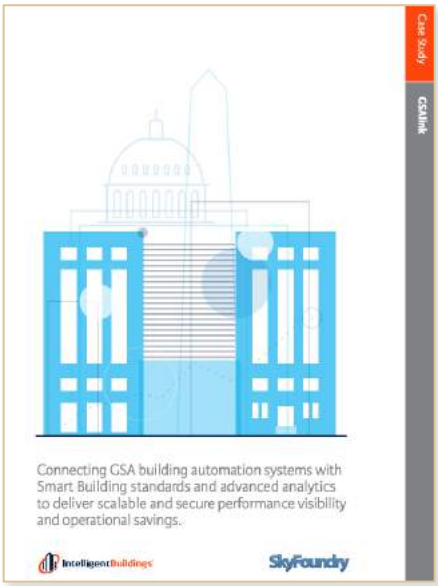
Proven at Scale - SkySpark Supports True, Enterprise-scale Deployments

GSALink

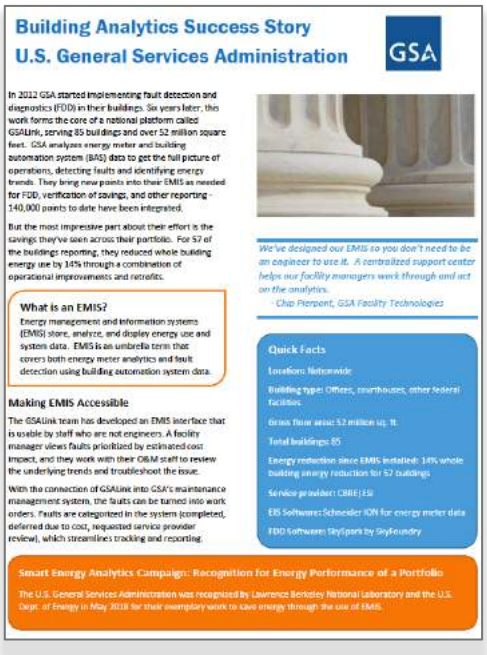
The **GSALink** project encompasses the largest facilities operated by the US General Services Administration.

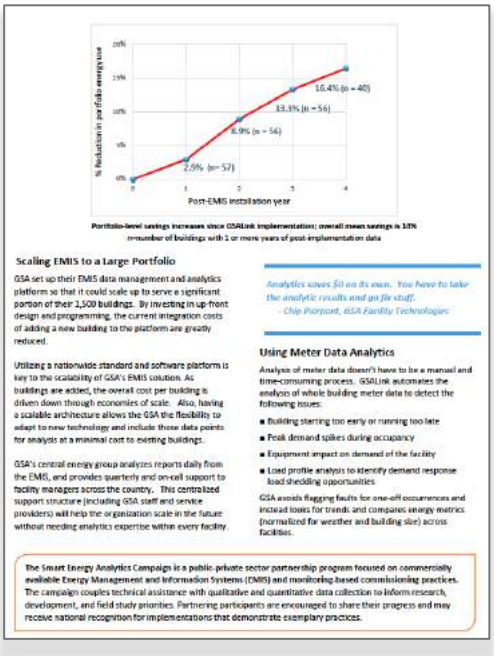
The project has been in operation since 2012 and is believed to be the largest single implementation of analytics for facilities. It's one of the largest implementations of SkySpark for a single customer. The stats:

- 100+ Facilities in all 11 GSA regions
- 50+ Million sq ft
- 30,000+ equipment systems
- On-boards **55 million** data samples (time stamped sensor values) **per day**
- Better Buildings Challenge Award Winner



Better Buildings CHALLENGE
U.S. DEPARTMENT OF ENERGY





Read the GSALink Case Study at this link: https://skyfoundry.com/file/336/GSALink---The-GSAs-Analytics-Project-Across-44-Million-sq-ft.pdf

Multi-site "Big Box" Retailer

A multi-site retailer (name withheld by request) utilizes SkySpark across their nationwide portfolio of over 925 locations, with a total of over 10,000 equipment systems and more than 300,000 monitored points. SkySpark helps them continue to drive cost out of the energy and maintenance and repair operations year after year.

Regional Health Care Network

This SkySpark deployment encompasses 27 acute care facilities, located in 5 states, covering over 13.5 million square feet. The system acquires data from approximately 290,000 sensor and equipment points. The project has achieved documented annual energy savings of $11.3 million dollars.

SkySpark is the Platform for Some of the World's Largest Facility Monitoring Service Providers

SkySpark is also extensively used as the platform for numerous enterprise-scale cloud-hosted facility monitoring services operated by major OEMs and independent facility monitoring bureaus. Here are stats for just a few:

Global Facility Monitoring Service Provider A:

This SkySpark OEM has deployed 1.25 Million total points hosted on 20 cloud-based servers

Global Facility Monitoring Service Provider B:

This SkySpark OEM has deployed 2.75 Million total points hosted on 20+ cloud-based servers

These examples highlight just a few of the large scale SkySpark systems. SkySpark is used in many other enterprise-scale systems that bring data-driven management to large portfolios of facilities, campuses and multi-site monitoring services.

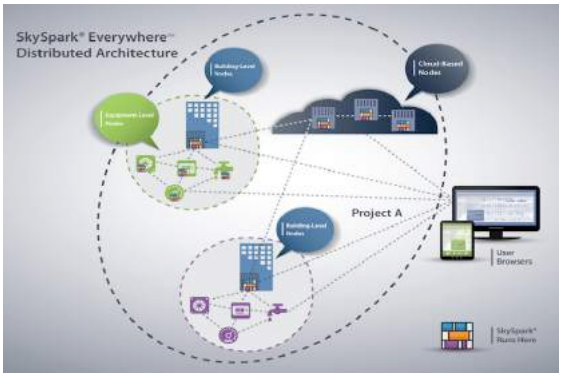
So, does SkySpark support enterprise-level scale? **The answer is a resounding YES.**

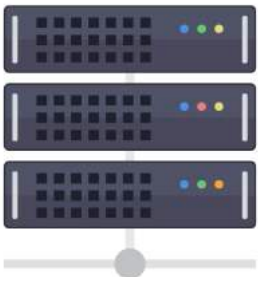
If you're considering or planning a large-scale application give us the opportunity to show how SkySpark can meet your needs - whether you want to deploy in the cloud or on-premise inside your secure environment. ***With SkySpark the choice is yours.***

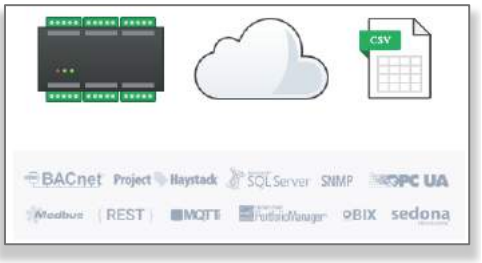
Making it Work at Scale: Essential Enterprise-level Features

The reason SkySpark is successful in enterprise-scale deployments is that the technology has been built from the ground up to handle the unique requirements of large-scale data collection, storage and analytics processing in real world applications. Some of those features include:

- **Distributed Computing** with multi-server Clustering. Enables efficient scaling while providing seamless user access across portfolios
- **Cloud or On-Premise**. SkySpark software operates on Amazon's AWS®, Microsoft's Azure® and virtually any other public or private cloud computing platform or on-premise using Windows®, OSX® or Linux®
- **High performance database** with advanced data compression. SkySpark's industrial strength Folio database enables clients to store billions of data samples, efficiently and cost effectively using conventional IT hardware. **With its advanced compression, Folio stores timestamped sensor samples in just one to two bytes which is often an order of magnitude less than traditional database solutions.**
- **Multi-tenancy**. Enables service providers to host multiple clients on a single instance of SkySpark with secure access limited to individual customers, while at the same time allowing authorized service provider personnel access to the entire customer base
- **Enterprise-level user management** with single login using **LDAP** or single sign on using **SAML**







Connect directly to your system via standard protocols

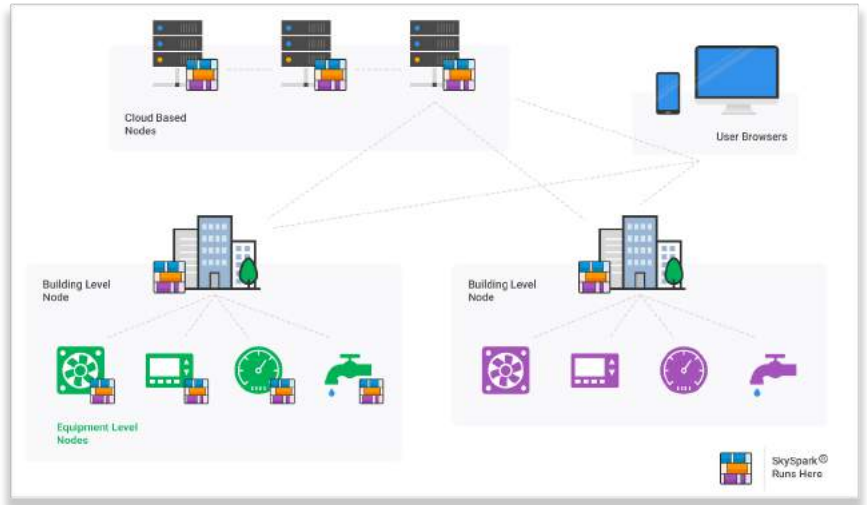
SAML

Deploy On-premise, in the Cloud or Both with Industry-leading Distributed Computing and Secure Networking Technology

Enterprise-scale doesn't mean cloud-only

Scaling at the cloud has become commonplace, but the reality is that the IoT is a **distributed computing challenge**. Data collection and analytics processing needs to occur at both the edge and the cloud to meet the needs of real-world applications.

So how do you address enterprise-scale in systems that span from the edge to the cloud with servers in the cloud, on-premise and at the equipment level? That's where the unique capabilities of the SkySpark Everywhere™ edge-to-cloud distributed computing architecture come into play.



SkySpark can be installed on networks of distributed computing devices – whether cloud-based servers, on-premise servers, PC's or small, low cost IoT edge devices. And, the exact same code base, providing the same feature set runs on every node, even small, IoT edge nodes. These distributed nodes connect together using SkySpark's clustering technology with all communications handled by SkySpark's efficient, firewall friendly and secure Arcbeam protocol. Learn more about the details of Arcbeam in this white paper: https://skyfoundry.com/file/226/SkySpark-Everywhere-Distributed-Informatics-Architecture---White-Paper.pdf

This unique distributed computing architecture provides key advantages that directly address the needs of enterprise scale applications including:

Reliable Local Access. In-building personnel have full access to their data and analytic results locally with no dependence on being able to communicate to an external cloud. *Can you imagine standing next to a critical piece of equipment and not being able to view its data because you can't connect to the cloud?*

Reliable Data Acquisition. Network issues can interrupt data collection in cloud-dependent systems,resulting in loss of critical data. Performing data collection services at the edge ensures that data is collected by the local node where the risk of communication issues is far lower. And, even

when operating at the edge, SkySpark still provides synchronization of data to enable both backup of data and user access at the cloud level through it's unique "replication" features.

Lower Data Transfer Costs. In addition to reliability, SkySpark's distributed architecture can dramatically reduce data transfer costs. By performing data collection and analytics processing at the edge **it eliminates the need** to transfer all data to a cloud-based central server. Only necessary analytic results need to go up to the cloud. This provides dramatic reductions in data transfer costs in systems that rely on cellular networks for transmission to the cloud. Users can see a 100:1 or even 1000:1 reduction in network traffic!

A Unified User Experience. The end goal of all of this technology is to deliver actionable information to the user. The fact that the analytics process is distributed across multiple nodes is hidden from the user. They choose to look at projects, sites, regions, buildings or equipment - navigating by whatever logical entities make sense for their application.

SkySpark provides users with a seamless user interface across highly distributed, enterprise-scale systems giving them a uniform view of all the data produced by their diverse devices and systems.

Reduced Engineering Costs – Because the exact same software and feature set is provided on every node, using SkySpark from the edge to the cloud means you **engineer once** with one uniform set of tools, versus using different technologies and tools for setup of data collection, secure communications, database, analytics algorithms and visualizations. SkySpark provides a complete end-to-end solution – yet it's fully open to share data with other applications that may be part of your total solution.

SkySpark Everywhere – A Pricing Model to Support Deployment in Small, Low-cost Edge Devices

SkySpark Everywhere's technology is one key part of this transformative solution; the other is a pricing model that lets you apply SkySpark in edge devices with capacities as small as 10 points with a price that starts at $60 USD.

This includes ALL of the features of SkySpark, not a reduced feature set or simple data collection agent.

Reduced Hardware Costs – By integrating direct communication to external devices via a range of standard communication protocols, and providing secure, highly-efficient communications to the cloud, SkySpark eliminates the cost and engineering effort associated with gateways and security appliances in many applications.

So, does SkySpark support enterprise-level scale? **The answer is a resounding YES.**

If you're considering or planning a large-scale application give us the opportunity to show how SkySpark can meet your needs - whether you want to deploy in the cloud or on-premise inside your secure environment. ***With SkySpark the choice is yours.***

SkySpark® – Analytics for a World of Smart Device Data

The past decade has seen dramatic advances in automation systems and smart devices. From IP connected systems using a variety of standard protocols, to support for web services and xml data schemas, it is now possible to get the data produced by the wide range of devices found in today's buildings and equipment systems.

Access to this data opens up new opportunities for the creation of value-added services to help businesses reduce energy consumption and cost and to identify opportunities to enhance operations through improved control, and replacement or repair of capital equipment. Access to the data is just the first step in that journey, however. The new challenge is how to manage and derive value from the exploding amount of data available from these smart and connected devices. SkyFoundry SkySpark directly addresses this challenge.

*The new frontier is to efficiently manage and analyze data to **find what matters™**.*

About SkyFoundry

SkyFoundry's mission is to provide software solutions for the "Internet of Things". Areas of focus include:

- Building automation and facility management
- Energy management, utility data analytics
- Remote device and equipment monitoring
- Asset management
- Automated System Optimization via analytics-based supervisory control

SkyFoundry's software helps customers derive value from their investments in smart systems. Learn more and request a demonstration at www.skyfoundry.com.

SkyFoundry

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