WHERE IoT MEETS THE ENTERPRISE

machineshop

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MachineShop is a next generation middleware company uniquely capable of simplifying the way organizations integrate systems and data between IT and OT.

MachineShop provides the foundational building blocks for the convergence of information technology (IT) and operational technology (OT), transforming the way organizations create and integrate connected business solutions. Through a unique and modern approach, we API-enable operational systems and data so that OT speaks the same language as IT.

With MachineShop every Internet-enabled thing, system, device, network, application, event and business process is expressed as a service. Developers can combine basic data extraction and normalization services with network management, all expressed as APIs in one common framework.

MachineShop is architected, designed and developed as a collection of discrete services that can be consumed individually or in clusters with an unlimited number of APIs.

COLLECT

This set of highly robust, scalable, near real-time services is specifically designed for integration of OT Systems and Devices to provide them RESTful API interfaces. API's provided include the ability to define, configure and receive information from these systems and devices without the need to update or change the communications protocol.

IQ

As information from various end points is consumed into MachineShop COLLECT, it can be analyzed in real-time for specific events or conditions that may be of interest. Instead of managing a flood of non-actionable data, our IQ services allow control over the conversion of your inbound data to actionable information.

CONTROL

Depending on edge device configuration or network, customer applications may be required to send configuration or other commands. This set of services facilitates the ability for your application to send these commands to your edge devices or systems without the need for detailed understanding of device protocols, communications paths, or command structure.

STORE

Storage of information from edge systems and devices can be especially challenging when interfacing to a variety of end points. MachineShop STORE eliminates this complexity by interfacing directly to our COLLECT service and providing an extremely reliable, redundant and fast database.
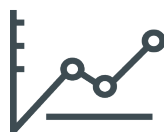
INSIGHTS

As data is COLLECTed and STORED with our system, you may require the ability to analyze or export this data for further processing. MachineShop has a variety of services available (via APIs) for retrieval. Several pre-built connectors are available to export your data to a variety of industry-leading systems for analytics.

MANAGE

API Management is becoming an integral part of most enterprise solutions. MachineShop provides a rich set of API's that enable customers to define API endpoints (even renaming those provided by MachineShop), create custom API's, integrate to external third-party API's (API Proxy), define users, set limits/meters and many more options.

The only IoT platform that takes an API-first approach—it is **Services as a Platform**, *not just another "Platform as a Service."*

Today there is an imperative to integrate the domains of Information Technology (IT) and Operational Technology (OT) and address their convergence in a holistic way through a common framework and architecture.

MachineShop is the only IoT platform that takes an API-first approach —it is "Services as a Platform", not just another "Platform as a Service."

MachineShop Platform of Services Architecture

The operations of complex organizations are distributed and so too must the technology that integrates them. That's the paradox of centralized architectures of monolithic platforms. Today's organizations require discrete services and flexible, distributed architectures.

MachineShop provides its services-based technology in a variety of deployment models ranging from closed edge to public cloud and every mode in between, dramatically simplifying the way organizations understand data and integrate systems within and between IT and OT.

Build new Applications

Develop feature-rich applications that provide access to any source of data, information or events through standard services. Combine data extraction and normalization with business logic services, all expressed as APIs in one common framework.

Share Information

Share access to specific data in a controlled way by allowing customers, vendors, and business partners to subscribe to information services.

Create New Revenue Opportunities

Create new and differentiated solutions with the data generated by connected devices, systems, and applications.
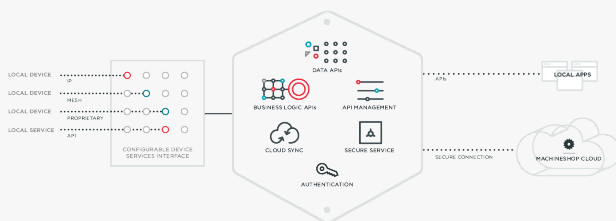
MachineShop CLOUD

MachineShop is architected as a collection of discrete services that can be consumed individually or in clusters, with an unlimited number of APIs. Combine data extraction and normalization with business logic services, all expressed as APIs in one common framework. Services can run in the public cloud, on premise, or function as a hybrid. All the features and capabilities of the MachineShop CLOUD offering delpoyed in a customer determined privately secured environment.
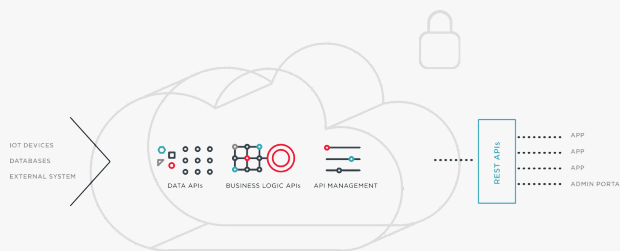
MachineShop Private CLOUD

In addition to a shared cloud environment, MachineShop can be deployed in a private, behind the firewall, set of servers as required. Optionally MachineShop can manage and monitor these deployments if the hosting center is accessible to our support team. MachineShop also supports a blended model where some of the service may be using a shared instance and others can be behind the firewall. Optional data storage options are available for complete management and control.

MachineShop EDGE

A specialized configuration of MachineShop allows for operation on an embedded appliance with limited memory and processor capabilities. MachineShop EDGE is extremly useful to Original Equipment Manufacturers (OEM's) and the maker community with requirements to run sophisticated data and business intelligence services on intelligent devices and gateways, supporting networks, and closed environments that have limited or no access to wide area networks (WAN) such as the Internet.

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DATA SOURCE MANAGEMENT

Translators and Connectors

Allows communications from applications to connected systems and devices with proprietary protocols

Converts proprietary protocol to standard web service

Bi-directional- Command transaction service for device command and control; Issue wake-up and other call back solutions

Endpoint Authentication and Data Ingestion

RESTful API accepts JSON (translated) messages and performs basic logic for look-ups, caching and storage

JSON message format (name/value pairs)

Main payload may be arbitrary and deeply nested

Real Time processing

Receive and process device information at line speed including the ability to interpret, enhance, store, and analyze the message contents

Last report speed

Caches most recent report per data source for quick access by application

Inbound report metering

Each monitor POST is recorded and associated with a user and can be limited based on programmable limits

DATABASES & STORAGE

NoSQL Mongo database for primary storage

Optional use of other databases as required

Ability to stream/connect to analytics tools and services

BUSINESS LOGIC SERVICES - RULES, NOTIFICATIONS, EVENTS

Enable proactive management of exceptions

Create basic or complex rules through RESTfulAPI endpoints - Semantic "if-then-else" JSON format; Executes in real-time

Alerts people, systems, or other services within the Service Exchange - Variety of alerts available: SMS, Email, HTTP, TCP, Pub/Sub; "Then" and "Else" alerts on each rule

SERVICE MANAGEMENT –METERING LIMITS & TRANSACTION RECORDING

Specific APIs to enable applications to understand service usage - Meter API, Limits API, Usage API

Service usage APIs adhere to user hierarchy

Aggregate usages and limits upstream to parent accounts

Account specific usage information available in MachineShop developer portal in near real-time

USER ADMINISTRATION - AUTHENTICATION

API hash key generated per application and user account

Including support for OAUTH1 rotating keys

THIRD-PARTY APIs

Create wrappers of third-party APIs through MachineShop API calls

REST and SOAP with custom headers

Uniform authentication through MachineShop

User keychain available for storage of external authentication keys

Service calls adhere to meters and limits

OAUTH2 support

Currently included external services

Google (Drive, Maps),Box, Dropbox, Evernote, Zendesk, Salesforce, Weather, SMS

Support for Custom namespaces

Customer-specific service endpoints

Custom return values

UTILITIES

Keychain

Store sensitive values or make variables maintainable

Encrypted storage

Substitute in any part of request with [~key name]

Generic storage

Associated arbitrary data with users and/or devices

Useful for capabilities, extra data or client apps, etc.

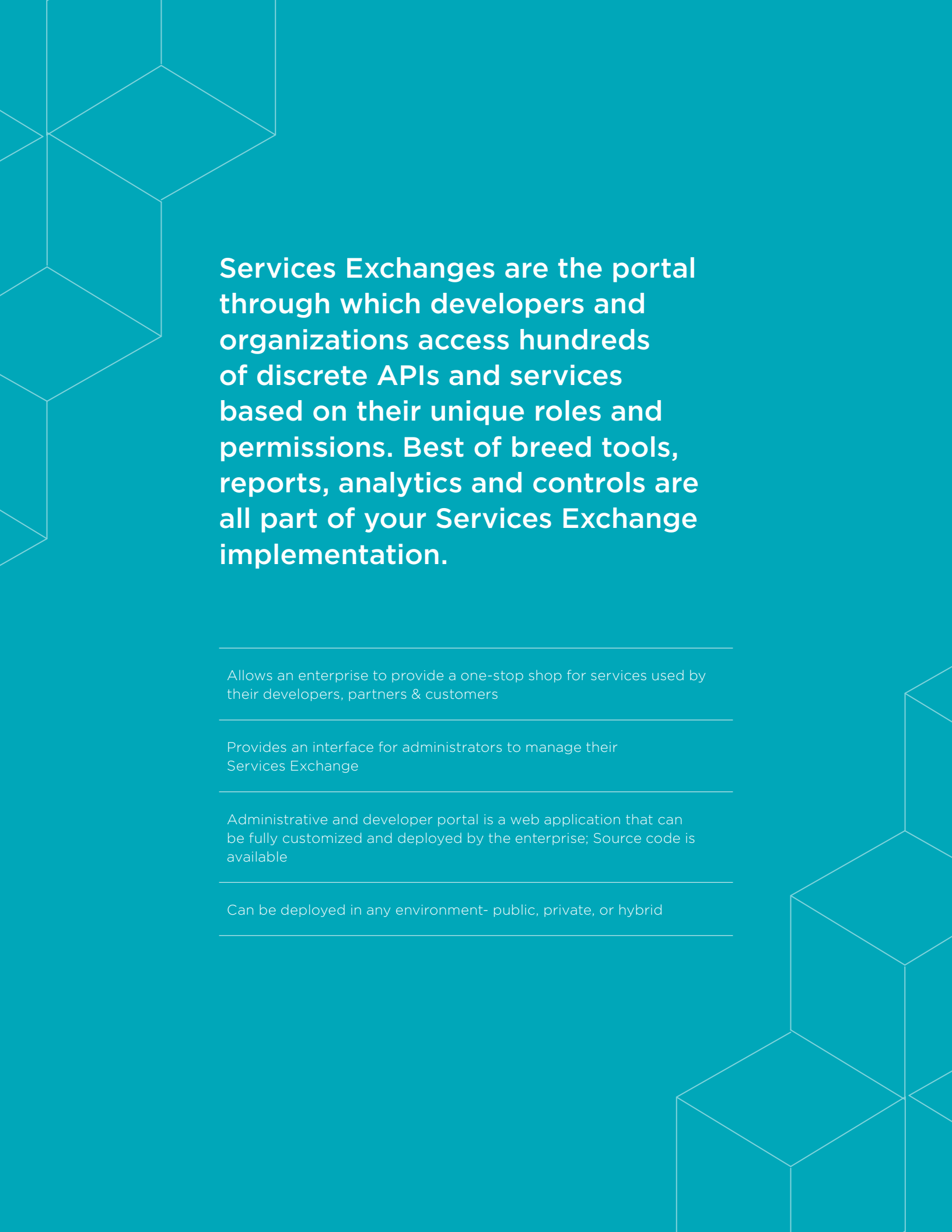### Notifications

Email & SMS may be used from client applications

HOSTING AND ENVIRONMENTS

Primary MachineShop Service Exchange hosted onscalable AWS services

On-premise hosting options

Deployable in private clouds

Hybrid models can be deployed using VPNconnections

Services Exchanges are the portal through which developers and organizations access hundreds of discrete APIs and services based on their unique roles and permissions. Best of breed tools, reports, analytics and controls are all part of your Services Exchange implementation.

Allows an enterprise to provide a one-stop shop for services used by their developers, partners & customers

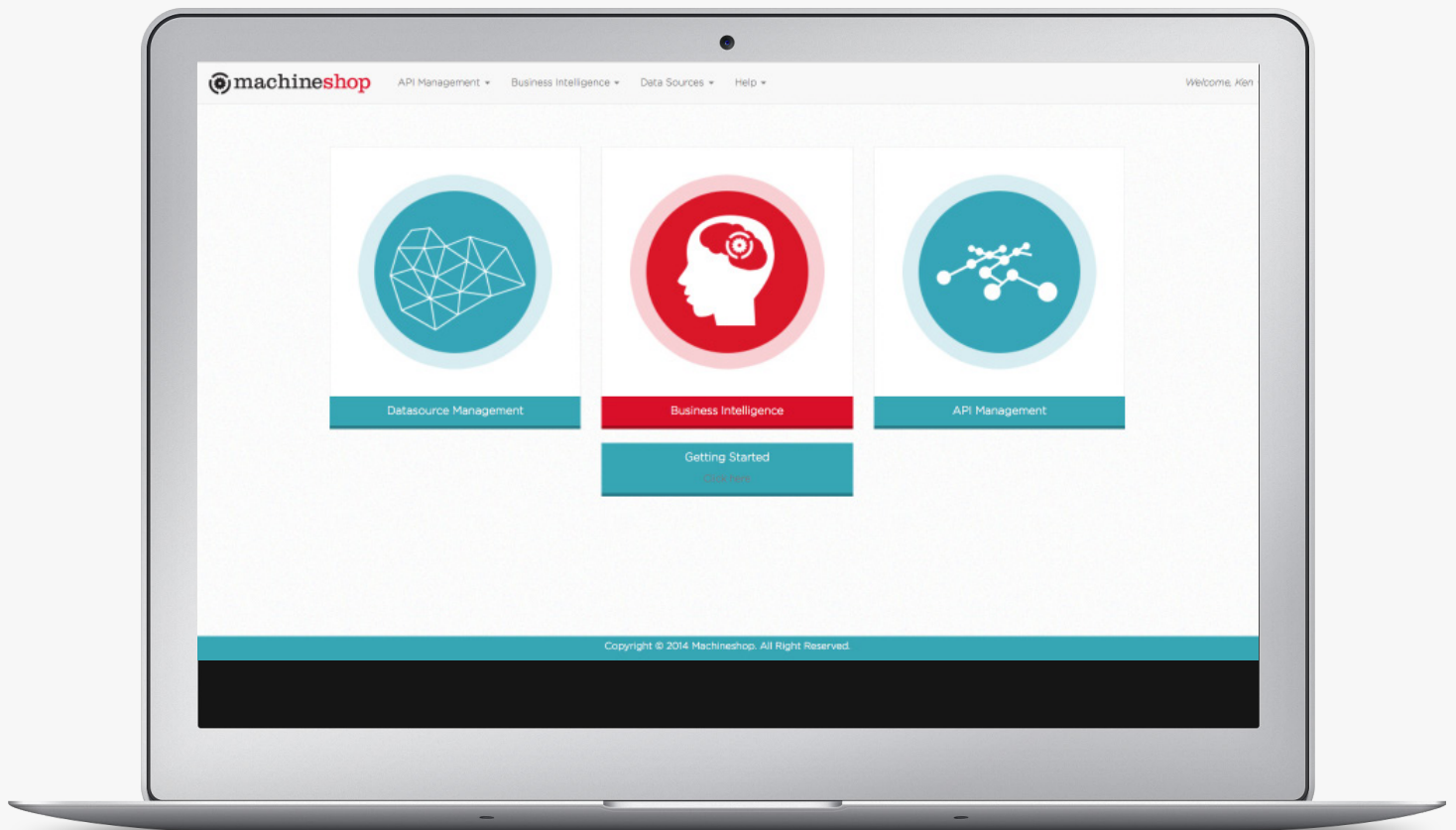Provides an interface for administrators to manage their Services Exchange

Administrative and developer portal is a web application that can be fully customized and deployed by the enterprise; Source code is available

Can be deployed in any environment- public, private, or hybrid

ADMINISTRATOR RESOURCES

User management

API Permissions

Meters and Limits

Documentation Control and Editing

Portal UI Customization

Reports

DEVELOPER RESOURCES

API Information and Documentation

Internal API's

External API's

MachineShop API's

Support Resources

Sample Applications

User Profile Management

Reports

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MachineShop is the on-ramp to the Internet of Services

LET'S ENGAGE
For more information, contact us at:
engage@machineshop.io

MachineShop provides the on-ramp to the Internet of Services where trillions of transactions will occur between billions of physical things and their interactions with other systems, applications and people. MachineShop's public or private Services Exchange allow customers to subscribe to thousands of unique, managed API-centric services regardless of whether they are developed by MachineShop, its customers or other third parties. Learn more at www.machineshop.io

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