



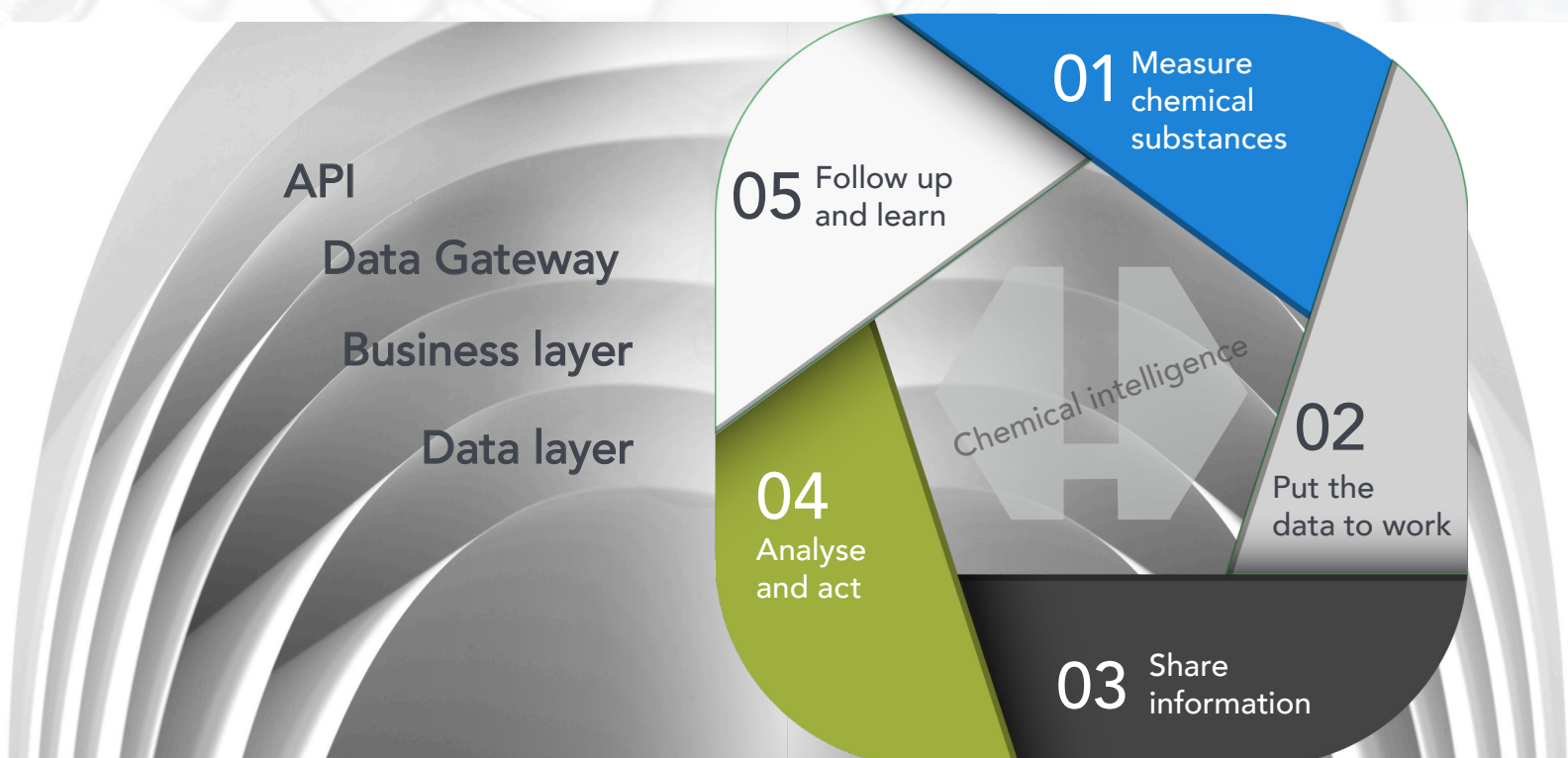
ChemDash—designed to fit your world

All your Serstech Indicators can be connected to our ChemDash software system. This means that besides on-the-spot chemical analyses, you get secure global data storage, cloud analytics, logging and additional services to fully support your work.

Your investment in the Serstech system thus gives you several Raman instruments in one. There are three basic sampling methods to support a wide variety of missions.

To derive the full value from our ChemDash system, you must be able to combine it with existing business processes and legacy systems, with chemical sensors and data, to create intelligence. Its architecture is therefore designed with factors such as efficiency of integration, flexibility, modularity, robustness and, of course, security in focus.

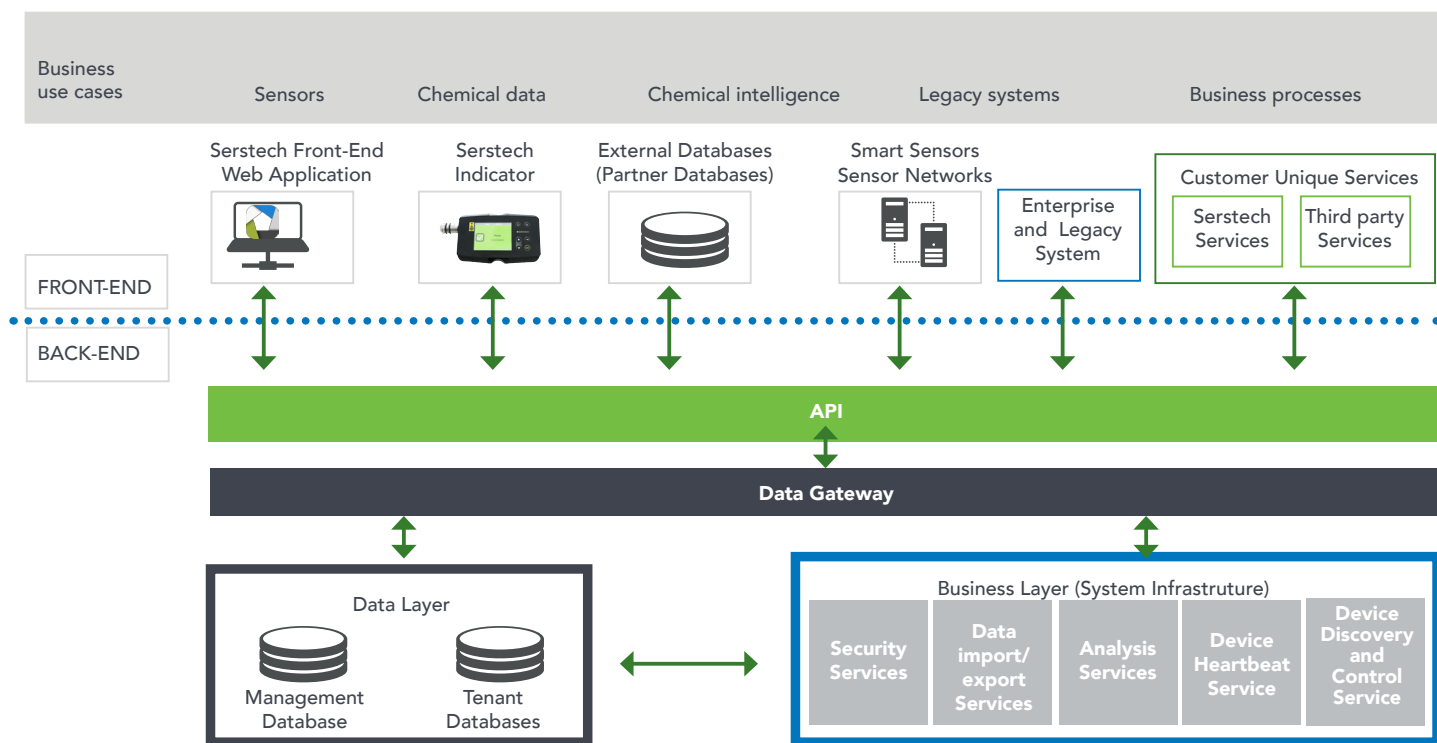
ChemDash can be envisioned as a layered system, in which business processes and systems are attached as endpoints and can be configured to input data, receive data or both.





ChemDash—designed for security

From a technical perspective, the system is divided into front and back ends. Our modular approach – with clear separation between functionality code modules in the front end as well as the back – ensures a high degree of flexibility in configuration and deployment. Both of these are important drivers of cost-efficiency.



Trust is essential for any enterprise deciding whether to adopt an SaaS system. That's why security is fundamental to the core design of ChemDash.

Consider that your chemical data might be used by several different types of clients, and accessed from several different locations around the world. In addition, your user base might range from a handful of people to many thousands, divided into different tenants (i.e. multiple enterprises, each with multiple users). All this means that the security mechanisms or "patterns" applied in the different data stores within your system are crucial.

The patterns in ChemDash are designed to ensure the security of user data, and to prevent one tenant's data from being accessed by another. Whenever a request for data is received, the validity of each user and tenant – as well as the validity of the request itself – is therefore authenticated. Data store access resulting from a request must also be authenticated, based on the requesting user and tenant.



A key principle that is implemented across ChemDash is therefore a high degree of data separation. Applying this data separation model means each tenant has a separate database. This approach makes it easy to extend the SaaS system data models to meet tenants' individual needs. It also simplifies the process of restoring tenant data from backup in the event of a failure, or if the system needs to be scaled up or down to more or fewer servers.

ChemDash security patterns

In addition to the mentioned data separation strategy, ChemDash by design enforces the following security patterns:

- **Gatekeeper design:** To minimise the risk of clients gaining access to sensitive information and services, all hosts and tasks that expose public endpoints are decoupled from the code that processes requests and accesses storage. This is achieved using a façade or a dedicated task that interacts with clients and then hands over the request, through a protected interface, to the relevant hosts or tasks.
- **Filtering:** An intermediary layer between the user and the data source acts like a filter, so the information appears to the user as though it were the only data in the database.
- **Permissions:** The system uses an authentication mechanism to authenticate devices, the tenant, the user and the role of the user trying to access the system. It determines access level rights, and controls what the user is allowed to do with the data, once authenticated (see connection security details below).
- **Encryption:** The system can encrypt tenant data to prevent access by unauthorized parties, even if they come into possession of it, for example by intercepting data streams between users and the system (see connection security details below).
- **Robustness:** Another important security feature is that the system can handle server redundancy and application reliance to events such as DoS (Denial of Service) attacks and infrastructure interruptions or breakdowns.
- **Logging:** Functions that support traceability and debugging throughout the system are also crucial from a security perspective. All activities in the system are therefore logged and stored, such as device or user log-in, failure to log in or out, database access, etc. Logging data can also be used during development to ensure high code quality, for example by identifying the sources of potential errors and tracing them to a particular module of functionality.
- **Deployment flexibility:** For extremely security-aware tenants, it may not be an option to deploy the system as a public SaaS service accessible over the regular Internet infrastructure, regardless of the precautions described above. In-house (private) deployment may be the only option. We have therefore designed the ChemDash system for cost-effective integration in both public and private deployment scenarios.



Connection security details

Strong HTTPS over SSL encryption

All connections between your devices and the ChemDash system are protected by strong HTTPS over SSL encryption and associated authentication protocols. As a user, you connect to the system according to the same principles.

This way of working offers the full security capabilities of SSL/TLS for all connections to and from the system. In addition, the use of standard security protocols enables interoperability with a wide range of computers and web browsers. It is therefore cost-efficient and easy to use.

The ChemDash servers are protected by Extended Validation (EV)

SSL certificates. This is critical, since it offers protection from interception attempts (i.e. "man in the middle" attacks) between users and the ChemDash system.

It is our belief that a cloud service without an EV certificate (as indicated by the "Green bar of trust" in your browser address field) should not be trusted. See the green "Serstech AB [SE]" trust bar in the illustration below.

Interested in knowing more about key aspects of the Permissions and Encryption security patterns? We cover the main points here. You are always welcome to get in touch to discuss your own security needs in more detail.



Other SSL certificates are significantly less secure from a data interception standpoint, even if the "padlock" symbol is shown in the browser.

Scaling considerations

ChemDash can be scaled from one to thousands of tenants, with anything from a handful to thousands of users per tenant. It can also handle multiple chemical sensors per tenant. This scalability is thanks to a modular design enabling functionalities to be spread and routed across several servers.

Data Gateway

ChemDash employs several design patterns and technologies to ensure modularity. However, a key enabler is what we call the Data Gateway. This software module receives or transmits data from or to one or several devices and users. It then routes that data to the correct destination.

Behind the Data Gateway, all requests are handled by services implemented using a micro-service design pattern. This highly flexible approach opens up a range of deployment options, not only public or private, but also hybrid options between the two. On a more general level, it can be made to handle a wide range of data types and hide the complexities of data processing from the database servers where the information is stored. This further enhances modularity and load-balancing capabilities.



https://www.chemdash.com/

Serstech AB [SE] https://www.chemdash.com/#/

SERSTECH

Home Missions Processes Events Incidents Documents Notifications Devices Data Device Logs Device Commands Administrator

Welcome admin@serstech.com (administrator)! Selected mission: Narcotics Mission View Mission Search...

Measurements

Add to Incident Show on Map

<input type="checkbox"/>	Class	Substance	Detected On	↑	Callsign
<input type="checkbox"/>	Not-categorised	Methanol	2014-09-19 07:57		161-7490
<input type="checkbox"/>	Not-categorised	Isopropanol	2014-09-19 08:12		131-9410
<input type="checkbox"/>	Not-categorised	Piperidine	2014-09-19 08:25		161-9220
<input type="checkbox"/>	Not-categorised	Acetone	2014-09-19 08:35		132-7810
<input type="checkbox"/>	Not-categorised	Benzonitrile	2014-09-19 08:54		161-9220

Events

Select filter...

- Non identified substance** 21d, 20h
 Trigger A non identified substance was found. Substance has id: 201-000-9975d4c0-029f-11e5-ba46-5c514f
- Incident created** 21d, 20h
 New Incident An incoming measurement has created a new incident (Incident001).
- Incident updated** 21d, 20h
 Update Incident An incoming measurement has updated an incident (Incident002).

Incidents

Create Incident Create Incident Report

<input type="checkbox"/>	ID	Name	Created On	↑	Status
<input type="checkbox"/>	Incident001	Incident1	2015-08-26 14:07		New
<input type="checkbox"/>	Incident002	Incident2	2015-08-26 14:07		New
<input type="checkbox"/>	Incident-201508261245	2015-08-26 12:45:23	2015-08-26 14:45		New
<input type="checkbox"/>	Incident-201508261255	2015-08-26 12:55:06	2015-08-26 14:55		New
<input type="checkbox"/>	Incident-992015314PM	9/9/2015 3:14:13 PM	2015-09-09 17:14		New

Documents

Upload New Download

<input type="checkbox"/>	Name	Description	Type	Owner	Linked On
<input type="checkbox"/>	eula.1028.txt	eula.1028.txt File.		admin@serstec...	2015-08-26 14:55
<input type="checkbox"/>	Document1	Incident1-Repo...	IncidentReport	admin@serstec...	2015-08-26 14:07
<input type="checkbox"/>	Document2	Förstörandelag...	Other	admin@serstec...	2015-08-26 14:07
<input type="checkbox"/>	Document3	Kontaktlistor.xls	Other	admin@serstec...	2015-08-26 14:07
<input type="checkbox"/>	Document4	Bild.jpg	Other	admin@serstec...	2015-08-26 14:07

Screenshot from ChemDash userinterface.



Service levels

ChemDash is designed from the ground up to be flexible as well as cost-effective across several deployment options. Our standard SLA is based on secure deployment using Serstech servers. It ensures critical factors such as availability (system uptime), support and maintenance. We also support other deployment options. Please contact Serstech to discuss your organisation's unique requirements.

Maximising the value of
your chemical intelligence.

