



# ClearBlade: Proven Scalability

## BUILD A BETTER INTERNET OF THINGS

ClearBlade's IoT technologies are reliable, scalable, fast, and secure. Upgrade today, outperform tomorrow, all while cutting costs.

## CLEARBLADE'S SCALABLE ARCHITECTURE:

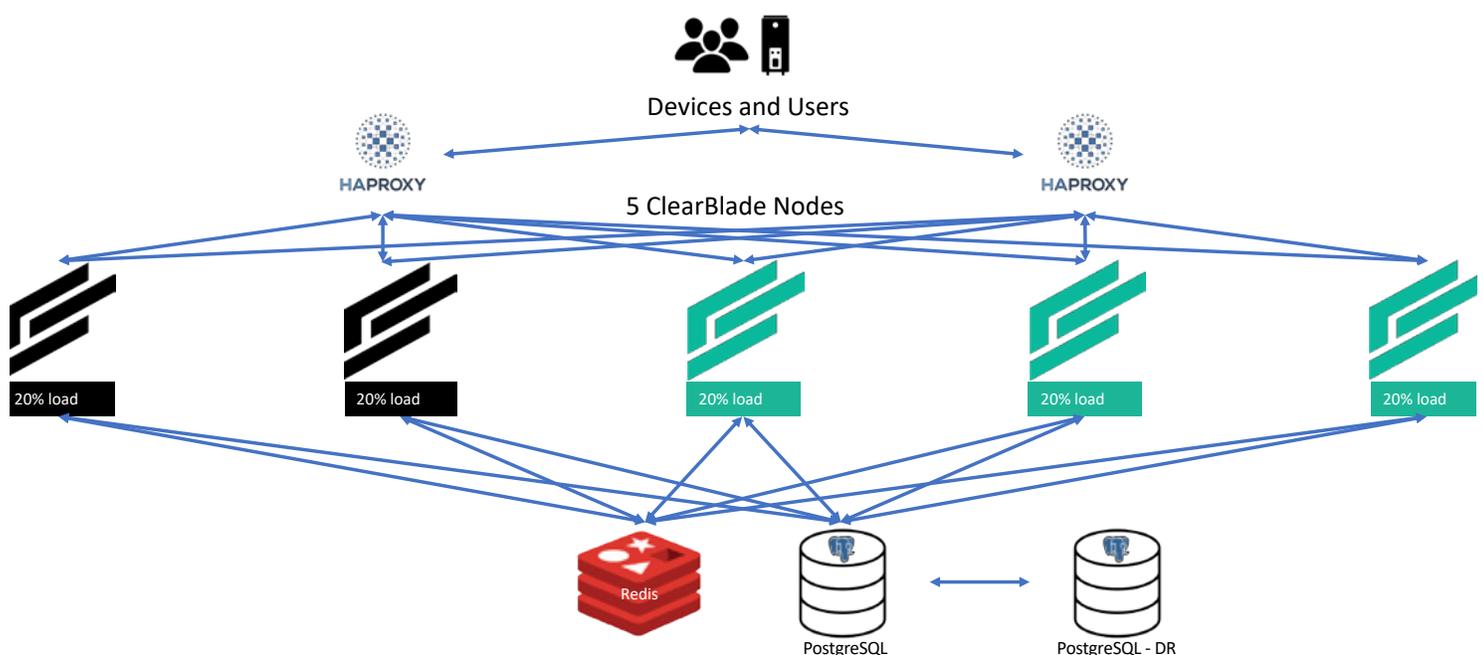
ClearBlade has built its platform from the ground up to handle both the security and scalability challenges associated with emerging IoT use cases. ClearBlade uses Cloud scale principles as part of its fundamental architecture. This allows for the rapid and dynamic scalability required in today's markets. General technologies include:

- High Availability - A proxy for load balancing user and device requests. This layer is often software defined, but may also be implemented using dedicated hardware.
- ClearBlade Cluster – Dynamically sized cluster of compute comprised of ClearBlade Docker containers allows for handling requests, sending responses, routing messages and processing business logic for users, devices and enterprise integrations.
- Caching and Data – For storage of information, Redis and Postgres are used as primary data stores allowing for flexibility and high performance. PostgreSQL is available for Disaster Recovery in real-time thanks to streaming cross region replication configurations.

## VALUE OF ADDING NODES:

Increasing platform capacity using the containerized clustering model becomes a simple exercise of instantiating a new compute instance, deploying the ClearBlade Docker Container and then starting it with the request to join the existing platform nodes.

This allows for rapid and easily automated scaling as needed. Integrated with cloud dynamic scaling models, ClearBlade can be configured to react to peak load and rest states in a cost optimized way.



# TESTING SCALABILITY

Whether On-Premise, in the Cloud, or at the Edge, validating an IoT platform that can handle your predicted future scaling requirements is difficult to do. The ClearBlade platform is able to rapidly support your needs of defining workloads, running simulations, and reporting the critical datapoints to understand your workload both now and in the future. The following modules make up the ClearBlade suite of scalability testing tools:

## **BladeRunner:**

BladeRunner provides a simple means of setting-up, running, and tearing down tests. The test scripts are written in JSON and interpreted by the BladeRunner driver. A single test can spawn multiple “sub tests” in parallel and BladeRunner provides a means of communication and synchronization throughout the test. Tests can be run serially or in parallel.

## **Simulation:**

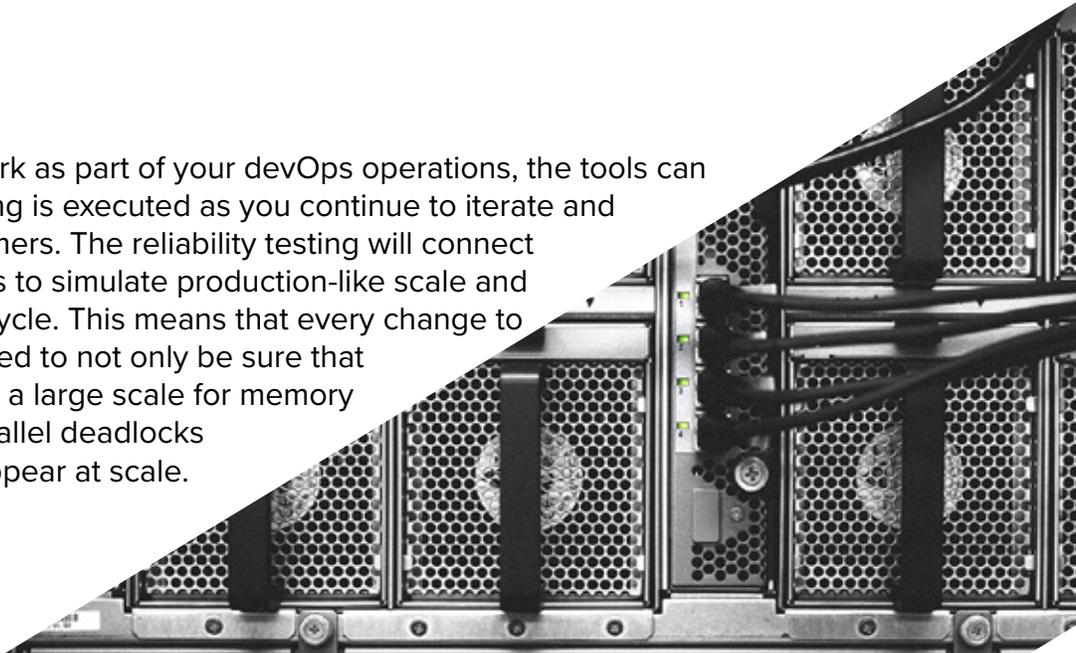
BladeRunner will set up simulated test environments including systems, users, devices, messaging rates, and business logic. Next, tests will be run again, referring to the previously set up environment. These tests will run at large scale and across a set of compute instances to ultimately simulate millions of connected products or monitored infrastructures. Finally, you can teardown a previously set up test environment to control your compute costs.

## **Monitoring & Reporting:**

As part of testing, ClearBlade provides monitoring dashboards to understand the actual profile of your compute resources and internal performance issues that are appearing during the simulation of your workload. Ultimately, this is a real-time dashboard showing metrics like CPU, RAM, connections, and API requests. Additionally, the logs that show in real-time are from both the Edge Platform and Platform services to allow a better understanding of the time it takes to process certain datasets. Using the monitors and reports, ClearBlade can collaboratively work to improve the execution and performance of your IoT Applications to get optimal performance out of your compute infrastructure.

## **Reliability:**

When putting BladeRunner to work as part of your devOps operations, the tools can be used to ensure that load testing is executed as you continue to iterate and push new features to your customers. The reliability testing will connect directly with your staging updates to simulate production-like scale and execute for a complete defined cycle. This means that every change to your logic and IoT Solution is tested to not only be sure that its functional, but is also tested at a large scale for memory performance, CPU utilization, parallel deadlocks and other challenges that only appear at scale.





## APPROACH FOR YOU:

To get started, ClearBlade offers the Scalability BluePrint Session. This session is valuable for organizations that already have clear application function and nonfunctional requirements. Using these base requirements, ClearBlade will complete the tasks below that result in a clear and simple recommendation for optimal server and application design architecture:

### **Application Profile:**

Gather requirements to understand number of devices, device and user communications, Edge processing, platform processing, parallel VS serial processing, data stored, batch data processes, etc.

### **BladeRunner Definition:**

With the requirements gathered, ClearBlade completes the BladeRunner definition file. This file translates the requirements and growth rates into a solid configuration that is ready for simulation at scale.

### **Test against 3-Node Cluster:**

ClearBlade uses a default small cluster configuration in a standard Cloud environment. This environment allows for validating of the workload and break down of the computations to understand exactly how much one device or one user will cost at a Cloud compute level.

### **Profile max transaction possible at 30% CPU & 30% RAM:**

With base metrics in place or load requirements set at the smallest level ClearBlade then pushes the theoretical max of users and devices to put the system at a healthy 30% utilization. This paints a simple picture of how much infrastructure an organization will need to run their IoT Solution at scale.

### **Recommendation Report:**

As a final output ClearBlade produces:

- A simple report showing a summary of understanding.
- A BladeRunner definition file.
- A historical summary of results.
- An efficiency score of processing per device and user.
- A recommended ClearBlade architecture document.