

Backend Engineer

1. Job purpose

PowerOptimal's Elon® Smart solar PV water heater relies on a robust, scalable backend platform to manage device connectivity, telemetry, and the broader application layer. We are seeking a skilled and motivated Backend Engineer to own and grow this platform on AWS, working primarily on backend and platform development with some front-end work required from time to time.

This role is remote-first, based in the Greater Cape Town area, with monthly in-person alignment.

2. A day in the life of the Backend Engineer

Backend Platform Ownership

- Take ownership of the development and maintenance of the backend platform for our IoT technology solution;
- Maintain a scalable and secure database architecture;
- Develop and maintain APIs that external parties can use to access the database;
- Operate the platform primarily on AWS, with event-driven design supporting our MQTT-based device telemetry;
- Contribute to occasional front-end work as needed to support internal tools or customer-facing features;
- Take ownership of the device telemetry ingestion pipeline, from AWS IoT Core and IoT Rules through Kafka (MSK) to downstream hot and cold storage consumers;
- Develop and maintain our serverless processing layer (AWS Lambda) for both hot-path and cold-path telemetry, including Protobuf-based message handling;
- Own and evolve our hot-storage time-series database (Timescale/Postgres) and our portal database, ensuring performance and reliability as device fleet size grows;
- Maintain and extend our backend services, including their gRPC interface and integration with our broader service architecture;
- Maintain and secure our public-facing API layer (API Gateway, CloudFront) and authentication flows (AWS Cognito), including third-party and partner API access;
- Support notification infrastructure (e.g. Lambda-based alerting via Simple Notification Service) and contribute to platform observability using tools such as Grafana;
- Apply security best practices throughout the platform, including IAM least-privilege access, TLS encryption in transit, and encryption at rest, in line with our cybersecurity protocol.

3. Does this sound like you?

Technical skills

- 4+ years of experience as a software engineer, with a strong focus on backend development;
- Strong background in backend development and cloud architecture;
- Proven experience in the development and ownership of IoT or smart device products and associated platforms;
- Strong hands-on AWS experience required, including services such as IoT Core, Lambda, API Gateway, Cognito, and CloudFront; experience with MQTT, Kafka (or similar event streaming platforms), and event-driven architecture is a strong advantage;
- Proficiency in CI/CD practices, including automation of cloud infrastructure using tools such as CloudFormation or Terraform;

- Demonstrated leadership in programming language choices, with a focus on making informed decisions for the project;
- Backend development experience in a similar strongly-typed backend language is required; familiarity with gRPC and exposure to Rust is an advantage;
- Commitment to implementing and maintaining robust testing processes;
- Familiarity with IoT protocols, connectivity, and hardware considerations;
- Strong security mindset, with experience implementing IAM least-privilege access, TLS encryption, and data protection practices in line with frameworks such as POPIA or GDPR;
- Excellent project management and organisational skills, with a track record of delivering projects on time and within scope;
- Experience working in an agile development environment.

Qualifications

- Bachelor's degree in Electrical / Electronic / Computer Engineering, or related field (or strong proven capability and experience in one of these fields);
- Additional certifications in product management or agile methodologies are a plus.

Personal qualities

- Driven and a self-starter;
- Strong problem-solving skills and ability to work in a fast-paced environment;
- Excellent collaboration and communication skills, both written and verbal, to convey complex technical concepts to diverse stakeholders.

4. Who is PowerOptimal?

PowerOptimal is an African leader in renewable energy technology solutions with an ambition to transform how hot water is generated and used. We are a small but fast-growing, high-performance team with high standards and big ambitions. We strive for excellence in everything we do. Our aim is to be transformative and collaborative in our work.

We focus on speed, scale, smart resourcefulness and unbounded optimism. We never start with 'no.' We're solution-oriented and focus on the outcome and the impact of any project or priority. We're a curious bunch, creative and a little quirky. We debate things passionately in team meetings and stand-ups. We agree and disagree on how the world should work, but we all agree on making a big difference through our work at PowerOptimal. Which is why we love it here and never take it for granted.

How to apply

If you are interested, please send your resume and cover letter detailing your relevant experience and why you are a good fit for this role to admin@poweroptimal.com with the email subject "Backend Engineer application".

Closing date: 21 August 2026