

# Søren Aalto

## Software Engineer

Cloud, Architecture & Engineering Leadership

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## Profile

Experienced software development engineer (SDE) with 7 years tenure at AWS as SDE / Senior SDE in several EC2 control plane service teams. Proven expertise in large-scale, collaborative software development, feature design across multiple services / teams, safe deployment practices, monitoring, and operational excellence. Strong background in managing complex ecosystems with a focus on reliability, scalability, and efficiency.

Prior to AWS, I held multiple IT leadership roles in higher education, overseeing strategy, operational management, budgeting, and people management for departments of 20–30 headcount. A unique blend of deep technical expertise and leadership experience.

Seeking remote-friendly individual contributor roles in system development / engineering, DevOps or data engineering

## Professional Experience

2022-2025	Senior Software Development Engineer
2019-2022	Software Development Engineer
	Amazon.com - AWS / EC2, ( <a href="http://aws.amazon.com/">http://aws.amazon.com/</a> )
	EC2 Placement
	Cape Town, South Africa

Developed and maintained **EC2 control plane services** for **instance placement, capacity reservations, and dedicated hosts lifecycle management**. Designed and implemented features across multiple service teams in a **hyper-scale, service-based ecosystem**, ensuring availability, scalability, and operational excellence. Owned **monitoring, metrics, new region service builds, and on-call operations**. Used operational data lakes extensively in root cause analysis and system design. AWS Appsec Guardian for org wide security reviews.

### Key Projects – Lead:

- **Instance Tenancy Defense-in-Depth Protections for Dedicated Hosts** – Improved tenancy validations for instance launches at the EC2 droplet level.

- **Xen-on-Nitro Support for Legacy Xen Dedicated Host Families** – enabled continued support for legacy host families on newer generation hardware.
- **Cluster Placement Group On-Demand Capacity Reservations** – added ODCR support for CPG constraints. ([CPG-ODCR launch announcement](#))
- **ODCR Support for AWS Local Zones & Outposts** – Extended ODCR product to edge zones. ([Localzones announcement](#), [Outposts announcements](#))
- **EC2 Placement Control Plane Hardening & API Migrations** – implemented hardened API endpoints and safely migrated callers to these.
- **Capacity Optimization for Dedicated Instance ODCRs** – Improved packing performance for dedicated instance reservations.
- **New Region/Zone Builds:** IaC build for core EC2 placement service in new region / zone **Cape Town (af-south-1)** and **Montreal (cac1-az4)**.

#### **Key Projects – Contributor:**

- **AWS UltraClusters / UltraServers Support for TRN2** – new internal service to manage TRN2 / ML clusters with strong tenancy guarantees.
- **Dedicated Hosts in AWS Outposts** – Extended EC2 Dedicated Hosts support to AWS Outposts.
- **Group Targeting for ODCRs** – Support to target instance launches to ODCR groups
- **Capacity Availability Improvements for Dedicated Hosts** – root cause analysis for dedicated host insufficient capacity errors to plan tactical improvements to our service.

#### **Key Competencies:**

- Large-scale **distributed systems development & API design**
- **Operational excellence:** monitoring, metrics, on-call ownership
- **Service architecture & implementation:** including core AWS services: EC2/VPC, S3, DDB, SQS, RDS, IAM, Lambda, Cloudformation / CDK, Cloudwatch, Glue/Athena
- **Cross-team collaboration & feature design**

**2013-2018**                      **Director: Information Technology Support Services (ITSS)**  
**Durban University of Technology (<http://www.dut.ac.za>)**  
**Durban, KwaZulu-Natal, South Africa**

Led central IT services for a **25,000-student, 7-campus university, overseeing networking, campus WiFi, ERP, student systems, voice communication, and end-user support**. Managed a team of 36 staff across three sections (end-user support / networking & applications / ERP systems) with a R25M annual budget, driving modernization and strategic alignment with institutional goals.

#### **Key Initiatives:**

- **Automated student enrollment for online classrooms** through in-house development.

- Hardware upgrade and **migration to a fully MS-HyperV virtualized data center**, standardizing infrastructure and reducing our data centre footprint / complexity
- Expanded student access via **campus-wide WiFi rollout** including student residences and affordable student tablet initiatives.
- Developed **data integration and analytics strategies** to support student success.
- Built system integrations and APIs for e-learning, **student analytics, network vulnerability tracking, network bandwidth monitoring** and user device asset tracking.

#### Challenges & Leadership Approach:

- Strengthened **network security and vulnerability monitoring**.
- Optimized **internet bandwidth management** through usage tracking and anomaly monitoring.
- **Led organizational change, to transform IT** from a risk-averse, operations-focused team to a more **agile, student/academic-needs-focussed** service unit.

**2012-2013**

**Software Development Engineer**

**Amazon.com - AWS/EC2, (<http://aws.amazon.com/>)**

**Cape Town, South Africa**

SDE on the EC2 frontend team that owns the service behind the public AWS/EC2 API endpoint. The role was a mix of **feature design and development** for the EC2 API coupled with **operational ownership** of the service including 24x7 service team on-call responsibilities. Feature development was for an enterprise **Java web service stack** that was the frontend to the large **SOA service ecosystem of the EC2 control plane** that provisions and manages the lifecycle of all compute, network and storage resources for AWS/EC2. Used Ruby / Python for operational tooling and testing.

My main project during the year was **VPC-by-default**, a high-visibility project that transitioned **EC2 from Classic to Virtual-Private-Cloud (VPC)** based networking. Launch announcement for VPC-by-default:

<https://aws.amazon.com/blogs/aws/amazon-ec2-update-virtual-private-clouds-for-everyone/>

This feature work involved orchestrating compute, networking, and capacity management across several backend services in order to provision a default VPC network configuration on-the-fly and inject this into user API calls while emulating the simpler EC2 classic API experience.

**2006-2012**

**Director: ICT**

**1996-2006**

**Principal Systems Consultant: ICT**

**University of Zululand, (<http://www.unizulu.ac.za/>)**

**kwaDlangezwa, KwaZulu-Natal, South Africa**

Initially I was the principal technologist for all **Internet connectivity/services** and **Unix/Linux server** infrastructure for Unizulu's central ICT services unit during the early history of this unit at the university. I was also the original campus networking specialist after migrating the main campus flat layer-2 network to a **layer-3 switched network using Cisco switches / VLANs**.

Later I did substantial web application development to provide

- **Web-based legacy modernisation front-end** for our mainframe-based student registration system to support an overhaul of our academic curricula
- **Greedy-algorithm to generate lecture timetables** from our curriculum models and enrolment data.

This work gave me insight into the processes and challenges in the university's academic administration, which later **led me to taking charge of the migration** from our in-house systems to a greenfields implementation of ITSv13 (now known as <https://itsintegrator.com/>) for our student, HR and financial systems.

The project leadership and broad knowledge of our campus systems **resulted in being appointed as Director: ICT for the university in 2006**, where I led strategic and operational management for a department of 20+ staff with a budget of R12M that was responsible for campus systems, networking, point-of-sale, Internet access, email, ERP/MIS systems, end-user computing and student labs.

Notable achievements under my leadership were:

- **improving Internet access capacity** by 25x through connection to [SANReN](#),
- **deploying WiFi hotspots on campus** and in student residences,
- **migration from a legacy PBX** to a multicampus IP/VoIP PBX,
- **deploying complete network/data centre/security** for a new 1500 student campus.

**Key competencies:** technical management and direction, academic processes, educational MIS requirements, budgeting and financial management, business case analysis, procurement and service provider contract management, capacity planning, HR management, IT governance, staff development and mentorship.

While I moved into a management role with this post, organizational constraints kept me at the technical coalface.

## Earlier positions:

**2003-2004**

**Sabbatical replacement lecturer  
Mathematics and Computer Science,  
St. Francis Xavier University, (<http://www.stfx.ca>)  
Antigonish, Nova Scotia, Canada**

Lectured Calculus, Engineering statistics, supervised CompSci labs for Java/C++/OpenGL programming, HPC programming and senior networking course project.

- 1995-1996**                      **Development Engineer**  
**CCII Systems, (<http://www.cci.co.za/>)**  
**Kennilworth, Cape Town, South Africa**  
 Embedded system / middleware development for shipboard control systems for military applications.
- 1991-1995**                      **System Developer**  
**Linkdata Solutions Pty,**  
**Cape Town, South Africa**  
 Embedded systems development for in-store point-of-sale / EFT integration and general data communications products including support for the early South African ISP backbone network.
- 1990-1991**                      **Technical Specialist - Security and Quality Assurance**  
**First National Bank, (<https://www.fnb.co.za/>)**  
**Johannesburg, South Africa**  
 Cryptography, EFT/POS security
- 1987-1989**                      **Programmer/Analyst**  
**HALCO Software Systems (<http://halcosoftware.com/>)**  
**Vancouver, BC, Canada**  
 Software development for simulation, optimisation and econometric modelling of forestry/sawmill processes.

## Education & Academic Awards

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- 1987**                              **M.Sc. in Mathematics, [University of British Columbia](#),**  
 Vancouver BC, Canada  
**Thesis Topic:** *Evaluation-Transversality Techniques in Bifurcation Theory - a Geometric Approach*
- 1982-1984**                      **[Natural Sciences and Engineering Research Council of Canada](#) Postgraduate Scholarship**  
 for graduate studies in mathematics at the University of British Columbia.
- 1982**                              **B.Sc. (Hons) in [Mathematics and Computer Science](#),**  
**[St. Francis Xavier University](#), Antigonish, Nova Scotia, Canada**  
**Major subjects::** Mathematics, Physics and Computer Science  
**Thesis topic:** *Differentiable Manifolds in Classical Mechanics*  
*awarded University Gold Medal in Science*

**Natural Sciences and Engineering Research Council of  
Canada Summer Undergraduate Research Awards**

- 1981** Mathematical methods of classical mechanics at the University of Toronto
- 1980** Research in data structures and algorithms at the University of Waterloo. Contributed to "Handbook of Algorithms and Data Structures", G.H. Gonnet and R. Baeza-Yates, Addison Wesley.

## Technical Presentations & Publications

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- 2016** **An Elegant (groovy) Approach to SIS Integration with Learn 9.1**  
Presentation at BbWorld16 in Las Vegas
- 2014** **A Year in the Cloud -- My "Sabbatical" at AWS**  
Presentation at ASAUDIT meeting at University of Pretoria
- 2011** **Introducing Zululand, Unizulu (and a little bit about ICT)**  
Opening presentation at ASAUDIT 2011 Spring meeting, which was hosted by my department at Unizulu's Richard's Bay campus.
- 2007** ***Is Java the New Cobol, or is the Future Groovy?***  
***Scripting languages on the JVM***  
**conference presentation** at the DITCHE Techie Event at Kopanong Conference Centre, Benoni, South Africa.
- 2005** **Session on [Web Application Development](#)**  
at the DITCHE Techie Event in Port Elizabeth, South Africa.
- 2002** **[Linux Migration - a case study : University of Zululand](#)**  
**presentation** at [Linux and Opensource 2002](#), Johannesburg
- 2002** **Technical Session on [Web Caches/Proxies](#)**  
at the DITCHE Techie Event in Port Elizabeth, South Africa.
- 2002** **[QUORUM: Prepaid Internet at the University of Zululand](#)**  
**article** published in [Linux Journal](#), November 2002.
- 2000** **[A Prepayment System for Managing Internet Usage](#)**  
at the [Citte2000 Conference](#) in Port Elizabeth, South Africa, July 2000