Rayan OPC UA SaaS Multi-Tenant Architecture

1. Deployment Models

There are two main approaches to serving multiple customers in an OPC UA SaaS environment: - **Single shared server**: All customers connect to the same instance. This creates risks around data isolation and confidentiality, and is not recommended. - **Per-customer instance**: Each customer has their own dedicated OPC UA server instance. This ensures isolation, simplifies security, and provides flexibility for scaling.

2. Automated Instance Provisioning

To achieve scalability and automation: - Use Kubernetes for orchestration: each customer runs in its own namespace with an OPC UA server pod. - Automate deployments with Helm charts or Terraform for reproducibility. - Apply GitOps pipelines to ensure consistent rollouts and rollback capability. - Provision storage and certificates automatically per tenant to guarantee confidentiality.

3. Horizontal Scalability & Costs

- **Infrastructure**: Horizontal scaling adds compute/storage costs per tenant, but allows predictable billing aligned with usage. - **Licensing**: Some OPC UA stacks require per-instance licensing; costs must be factored into subscription pricing. - **Operational overhead**: Automation minimizes admin costs but requires upfront engineering investment. - Pricing models (annual, pay-as-you-go per tag/message) should align with competitor practices but emphasize transparency.

4. Competitor Insights

Competitors like TagoIO and Prosys tend to use either volume-based or per-instance pricing. By adopting automated per-customer provisioning, Rayan Platform can offer: - Stronger guarantees of data isolation. - On-demand scalability per customer. - A clear mapping between customer load and subscription cost.

5. Recommendations

- Adopt a per-customer OPC UA server model to maximize security and flexibility. - Implement automated provisioning via Kubernetes and Helm/Terraform. - Tie pricing directly to infrastructure/resources per tenant, ensuring transparency. - Differentiate Rayan by emphasizing **isolation, automation, and scalability** as core SaaS advantages.