Solution Profile

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RADCOM

Automated Assurance and Active Intelligence

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Cover image: Photo by Patrick Kelly

INTRODUCTION

RADCOM provides automated assurance solutions to tier-1 CSPs, primarily in North America, Asia, and Europe. Despite being smaller in scale with ~300 employees and $40M USD in annual revenue, RADCOM has successfully landed business with multiple greenfield and brownfield operators, including **Dish Wireless, Rakuten Mobile**, and **AT&T.**

This profile focuses on RADCOM's ACE assurance platform. ACE stands for "Automated," "Containerized," and "End-to-end." ACE provides automated assurance and integrates with RADCOM's other products, including AIM (AI-Module), and NWDAF (Network Data Analytics Function) to provide closed-loop automation and network management.

ABOUT RADCOM

Facts & Figures

RADCOM was founded in 1991 and went public in 1997. Its headquarters is in Tel Aviv.

Figure 1: RADCOM Company Snapshot (RDCM)

Source: RADCOM

Figure 2: RADCOM Selected Financials

USD	FY 2018	FY 2019	FY2020	FY2021
Revenue	$34.1M	$33.0M	$37.6M	$40.3M
Gross Margin	74%	70%	71%	72%
Net Profit (Loss)	($0.3M)	($4.6M)	($1.8M)	($1.9M)
Cash	$62.0M	$69.3M	$69.0M	$70.6M
Equity	$78.5M	$73.9M	$72.0M	$70.2M

Source: RADCOM

Strategy

RADCOM positions service assurance as a key part of the 5G value proposition, therefore, a necessary element of any operator's 5G deployment plans. By combining improved analytics, increased visibility, and advanced AI, RADCOM positions its platform as a closed-loop automation solution for 5G-SA and 5G-NSA operator deployments. With current customer traction at notable accounts having both configurations, RADCOM can rightfully boast of increasing opportunities going into 2023.

Their strategy of targeting early 5G-SA rollouts paid dividends with wins at **Dish Wireless and Rakuten Mobile**, giving them an early mover advantage plus 5G deployment experience with leading 5G-SA operators. Key components of the solutions to improve customer experiences include:

1. Passive probe-based assurance for low-level troubleshooting.
2. Built-in classifiers and machine learning algorithms for predicting anomalies.
3. Containerized soft probes for end-to-end network assurance.

RADCOM is positioned as an experienced 5G assurance vendor with a full cloud-native assurance offering that includes automation, checking all the boxes for most operators looking at upgrading or replacing their OSS/BSS infrastructure.

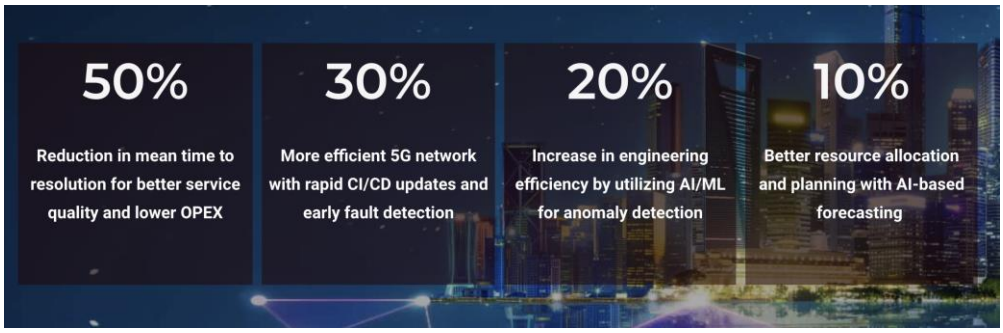
Figure 3: RADCOM ACE: AI-Driven Use Cases

Source: RADCOM

RADCOM differentiates its offering by focusing on AI-driven use cases, including network performance optimization, intelligent network capacity planning, and targeted improvements in customer experience. RADCOM algorithms are designed to smooth out operational noise and improve signal acquisition, resulting in a faster and more reliable assurance platform that approaches the ideal of having a highly adaptive solution with self-healing characteristics.

Finally, RADCOM sets specific expectations for the value its technology can deliver to customers. One of the benefits of being an early market mover is having access to valuable deployment statistics.

Figure 4: RADCOM Efficiency Targets



Source: RADCOM

RADCOM punches well above its weight when it comes to investment for results. With three solid industry customers, it has gained significant credibility, and continuing positive financial signs point to an ability to capitalize on that with incremental new customers. Having a deployed product that is actively collecting network data positions RADCOM in a solid position, assuming their platform delivers the efficiencies being quoted and the customers below maintain their positive support.

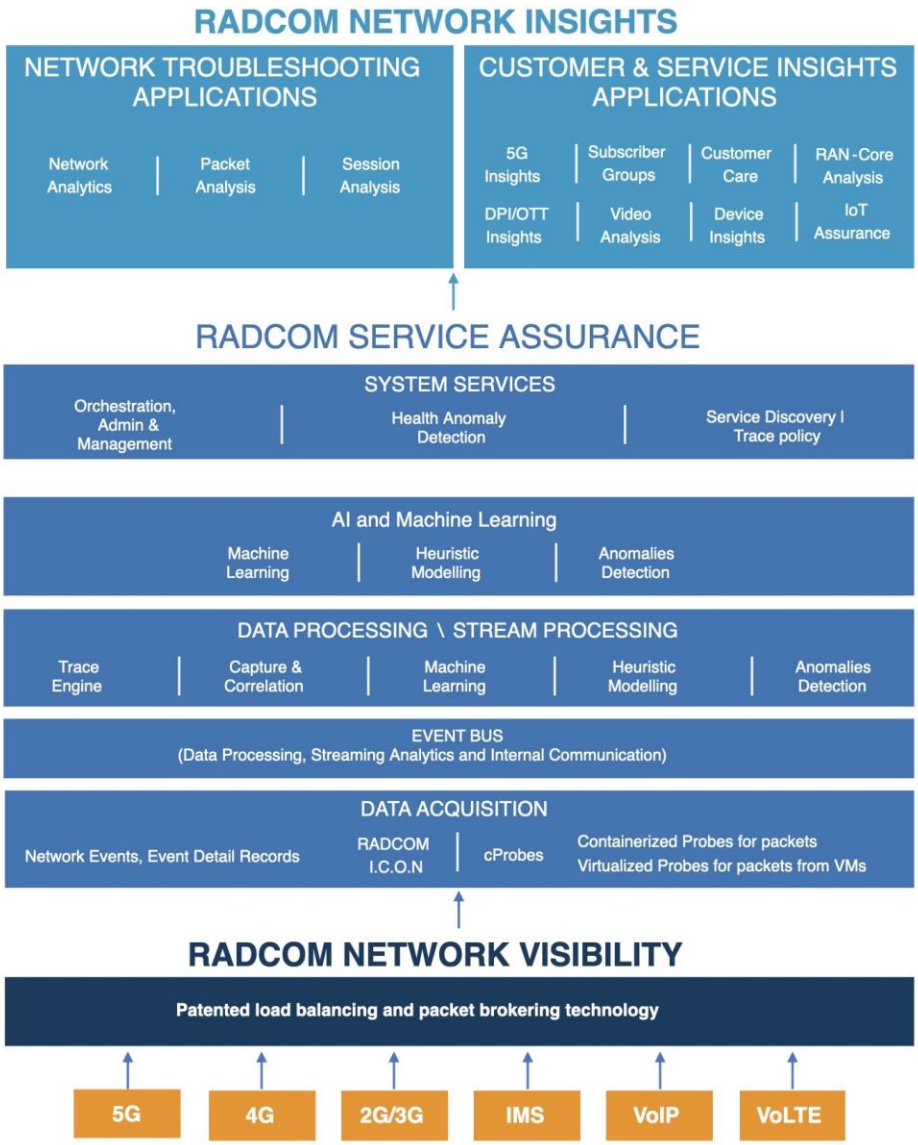
Figure 5: RADCOM Market Traction

Source: RADCOM

Products

RADCOM's architecture is exclusively focused on enabling 5G assurance for operators. It is a fully containerized, AI-driven, automation-focused, end-to-end assurance platform designed for scaling 5G networks. Operating across multiple layers, RADCOM has leveraged prior experience in identifying customer impacting network events to improve network visibility, which feeds their service assurance stack with higher quality information, which in turn delivers higher quality output to network and customer management applications. By combining continuous monitoring with learning models, RADCOM delivers a truly closed-loop assurance platform.

Figure 6: RADCOM Solution Architecture



Source: RADCOM

RADCOM Network Insights

Network Insights provides an integrated view of 4G and 5G networks, targeting service degradation and other high-priority experience indicators. Insights fully supports 5G-SA, SBA architecture, SBI deciphering and allows segregation of 4G and 5G connected traffic.

Real-time streaming analytics enables closed-loop automation by providing proactive assurance, including:

- Alarm generation to external BSS/OSS/NFVO systems.
- Ad-hoc generation of new flows, such as alarms.
- Mediation of external data sources to the message bus.
- Process flow automation using an easy-to-use graphical user interface.
- Publish to a queue (Kafka, JMS, AMQP).

- Call a Rest API.
- Report to Syslog.

RADCOM Service Assurance

Service Assurance provides the “E” in ACE for end-to-end. RADCOM containerized probes (cProbes) enable packet monitoring across 4G and 5G networks and across multiple domains, including public, private, and hybrid. The probes feed data into the AI/ML engines, enabling learning and prediction as more data is collected. Kubernetes allows automated scaling of resources.

RADCOM Network Visibility

Network Visibility provides load-balancing and packet brokering, extending the ability of operators to manage traffic across multiple domains in NFV and 5G networks. Packet broker instances are tagged, simplifying both scaling and balancing, with up to 20K simultaneous evaluation filters supported. Visibility is provided across 4G, 5G, IMS, VoIP, and VoLTE networks.

APPLEDORE ANALYSIS

RADCOM has successfully made early strides to troubleshoot and provide multi-domain support in a 5G network. The win with **Rakuten Mobile** was effective because Rakuten Mobile was considering the option to build its own software-based passive probing before selecting RADCOM. Rakuten wanted to deploy a test and measurement system in the 5G network that could help it isolate and debug issues in the RAN for each call, session, and potential break points.

Rakuten was moving quickly to disrupt the market, and RADCOM stepped in to develop specific business outcomes for Rakuten. Early trials proved effective, and Rakuten realized that by using RADCOM, they could get to market faster than building it internally. RADCOM set up a team to work with Rakuten radio, core, and operations teams. The result was a win-win for both in that real-world use cases were delivered rapidly for VoLTE/RCS troubleshooting, application-based quality of service management, and near real-time isolation of call drops. RADCOM enhanced its ladder diagrams to isolate and understand the behavior of each call and session.

RADCOM has accumulated significant experience from early customer deployments that it can effectively capitalize on the 5G SA deployment model. This first-mover advantage should help to accelerate top-line growth as the market evolves. The company has successfully leveraged its domain knowledge with each engagement and capitalized on CI/CD processes to improve responsiveness. They have also demonstrated an ability to successfully engage with 3rd parties to deliver services with greater innovation and customer value.

RADCOM's early win with **AT&T**, which accounts for a significant share of its business, has been expanded in the past year with another multi-year contract. RADCOM has also won a multi-year contract with DISH Network, where its solution is deployed on the AWS cloud.

Our recent call with Rami Amit, head of products and CTO for RADCOM provided some insight on the future strategy of RADCOM. Rami is focusing future development on collecting at the network edge to solve the data reduction challenge. In the future, the User Plane Function (UPF) could be extended to the edge. This allows packet processing and traffic aggregation to be performed closer to the network edge improving bandwidth efficiencies. Rami’s core philosophy is to collect the data as a stream and analyze it in real-time

and near real-time, depending on the application's needs. A key aspect of the solution is to configure the time slice from a range of 1 minute to 15 minutes to acquire KPIs necessary to support different use cases.

Several suppliers have moved their development activities forward to support active test agents to support a dynamic, distributed programmable network. Rami believes this is effective for network transport testing but lacks sufficient fidelity to understand live session data flows. Passive probing is far more superior for specific protocols and sessions that cannot be simulated effectively.

The RADCOM portfolio can be deployed in an AWS, GCP, Azure, and Rakuten mobile native cloud. This is a strong value proposition for operators looking for partners offering different options to support new business models that have yet fully materialized in the edge and private networks domain.

RADCOM has designed its portfolio to support a microservice architecture. RADCOM ACE seamlessly integrates with Kubernetes, which controls the containerized functions to support automation in the network. Kubernetes allows RADCOM ACE to be fault tolerant and highly scalable.

RADCOM supports machine learning supervised and unsupervised models. Its AIM video classification model is a supervised model. But RADCOM is also using unsupervised machine learning models that allow a user to exclude unreliable KPI indicators from the model to improve business outcomes.

RADCOM supports a separate NWDAF function. It supports 3GPP releases 15,16, and 17. It also has extended use cases for proprietary vendor event feeds that allow RADCOM to collect 3rd party data feeds into its AI engine.

Overall, Appledore is positive on RADCOM and its ability to help MNOs test and troubleshoot their mobile networks while transitioning to different 5G deployment models. RADCOM has a unique value proposition for helping their customers gain valuable insights into the performance of their mobile network and provide longer-term options for the automation of a 5G SA network.

Insight and analysis for telecom transformation.

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