Red Hat partners with Intel and Ericsson to drive key sustainability initiatives

As demand for faster and higher volumes of data grows, so does the challenge for businesses looking to meet sustainability goals. Telcos already account for up to 3% of global energy demand, and while 5G networks are 90% more energy efficient than 4G, energy consumption is still expected to rise dramatically. Red Hat® is partnering with Intel and Ericsson to optimize and reduce telcos' energy consumption without compromising network performance. Focusing initially on radio access networks (RANs), the partnership aims to achieve over 20% savings in processing power consumption. It's the first of what Red Hat hopes will be many similar initiatives to help enterprises meet overall sustainability goals.

Question: What are your organization's primary objectives in terms of sustainability?

Jeni Barovian, Vice President and General Manager, Network and Edge Compute Division, Intel: Intel has had a long-standing commitment to sustainability since the mid-1990s. There are three tenets to our mission: reducing our own footprint through sustainable silicon manufacturing, designing energy-efficient products, and collaborating across ecosystems to create scalable solutions.

Collaboration is the key to realizing the era of sustainable computing. We engage directly across OEMs, software vendors, service providers, policymakers, and more to drive emissions reductions and promote industry-wide improvements in sustainability.

Oscar Toorell, Head of Technology, Cloud RAN, Ericsson: Ericsson has driven wireless network development from 2G, 3G, 4G and now with 5G. These latest generations have the potential to significantly increase productivity and efficiency across a range of infrastructure and industry sectors, helping us towards a low-carbon economy.

A big part of wireless energy consumption is from radios—equipment you will often find at the top of a mast—where we invest significantly in weight, power, and efficiency.

Chris Wright, Chief Technology Officer and Senior Vice President Global Engineering, Red Hat: The technology strategy at Red Hat focuses on creating and providing additional open source tools, capabilities and methodologies that make sustainability an integral part of the control and management of cloud-native architectures. Together with our customers and partners, we can enable a holistic, data-driven, energy-saving approach across IT, network, edge, core, and cloud environments.

Red Hat Innovators in the Open

About Red Hat Innovators in the Open

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Question: What were the early objectives in this partnership?

Barovian: We have a long history of innovation with Red Hat, driving digital transformation and combining silicon experience with software innovation. We're leveraging that history to accelerate and scale solutions in response to climate change, which is one of the world's greatest challenges.

Intel is already seeing impressive results in helping our network and edge customers reduce carbon footprints and achieve sustainability goals. We were very happy to be recognized recently by ABI as the most sustainable telco vendor, which speaks to our results in driving sustainable computing.

Toorell: The compute platform that drives the radios—and ultimately provides the 5G service we all rely on—is an important part of our offering, and this is where the partnership with Intel and Red Hat comes into play. As we shift from highly integrated dedicated solutions to cloud and virtualized networks, we're looking to leverage efforts across the entire ecosystem – from accelerator technologies to energy-efficient compute platforms to advanced power management driven by AI.

Wright: Telecoms environments are extremely complex and our work so far is just a first step. As you hear from our partners, when it comes to reducing the carbon footprint service providers have many areas they can optimize. Achieving this needs a more integrated approach and data collection and analytics will be key for our customers to make the best decisions.

You cannot control what you cannot measure, and you cannot measure what you cannot see. Therefore, we are looking at enhancing observability capabilities to get relevant data and then leverage AI platforms to analyze the data at scale and speed and make recommendations on actions to take.

Question: How have Intel and Ericsson worked together and with Red Hat on sustainability-based initiatives?

Toorell: We have been working with Intel to ensure that successive generations of Xeon processors can support the expected growth in data demand at a given power level through our RAN operation. Then, using Intel's C-state/P-state technology, we have managed to drive further power savings of up to 20%, putting cores in microsleep while still guaranteeing that no traffic is blocked or lost if demand increases.

Barovian: The results Ericsson is seeing in RAN power consumption have been made possible by several Intel technologies. Our 4th Gen Intel® Xeon® Scalable processors offer up to twice the vRAN capacity at the same power compared to the previous generation. And our 4th Gen Intel Xeon processor with Intel vRAN Boost lowers power consumption by an additional 20%.

But we also need software that can optimize power consumption without compromising performance. The new Intel Infrastructure Power Manager for 5G Core delivers up to 30% additional CPU power savings, leveraging built-in telemetry and application-aware power management. This is another great example of optimized usage of P-states and C-states, which Eric mentioned.

Wright: Optimizing energy efficiency requires new tooling and, most importantly, open industry standards for both the technology and the data in order to provide interoperability. Our work with Ericsson on RAN and Intel on the chip and node side are great examples of creating fundamental building blocks that contribute to a larger, more comprehensive approach. The joint work provides tremendous experience for us and the industry.

Question: Are there any other areas where collaboration delivers successful outcomes?

Barovian: Intel is working with the Ericsson Cloud RAN ecosystem to develop cooling technologies, such as cold plate and liquid immersion cooling, to lower overall system power consumption. Reducing waste is also a key imperative. Through initiatives like the Data Center Modular Hardware System specification in the Open Compute Project, Intel is aiming to improve circularity through modular server design for data centers, telcos, and edge computing.

Toorell: We're also focusing on how providers can break the upward trajectory of energy consumption in mobile networks in the face of incredible growth in demand for data. To do that, we need a holistic view of network evolution, expansion, and operation.

Specifically for Cloud RAN solutions, we need to utilize the latest hardware and software, which includes energy-efficient servers, integrated acceleration and power-saving technologies, and algorithms that intelligently adapt to traffic capacity needs in real time. We do all this while keeping in mind the importance of maintaining network performance.

Wright: We do a lot of work with Intel that impacts both the IT and network side of telcos, and our partnership activities with Ericsson and Intel are delivering exciting results as new solutions are developed and implemented.

As I said, telecommunication networks are complex, and to execute in a secure and agile way, automation at every level will be a fundamental capability. A holistic approach will then have the proper reporting capabilities to record and document the achieved improvements.

Our approach to sustainability is based on optimizing processes at node, cluster, system and domain levels. These four dimensions act as a reference for telco service providers to explore the options that are available today and plan how to improve their future environments.

Question: What are the next priorities for the partnership?

Barovian: We must focus on decarbonizing the energy we consume. This means building carbon-responsive networks and taking maximum advantage of sustainable energy sources by intelligently orchestrating workload placement. We also see an opportunity to partner with Red Hat and others to combine the power of edge compute, 5G, and AI to transform operations across industries–whether that's energy, manufacturing, smart agriculture, or smart cities and transportation.

The opportunities are endless. The promise is meaningful gains in performance, quality, and business value, while also improving sustainability.

Wright: As we look to further optimize domains such as RAN, IT and network infrastructure, data centers, and cloud environments, we're also looking to expand further into more energy-efficient programming. Another strength will be our combined partner ecosystems to get more partners involved to provide additional capabilities mentioned. We can then work with them to build out more abilities to measure and control energy consumption, and to integrate their capabilities into a unified architecture.

Toorell: Ericsson is driving action on the pathway to becoming net zero in 2040 across our full value chain – including the supply chain, network portfolios, and our own activities.

Ericsson continues to develop solutions that enable operator networks to use as little energy as possible while managing expected growth in data traffic. In the context of Cloud RAN, we work closely with partners and the cloud ecosystem to utilize and implement the latest hardware and software innovations. We're all in this together!

Learn More

Red Hat Community and Social Responsibility Report

Read the article: How telcos can achieve their sustainability goals

Read the blog: Introducing Kepler: Efficient power monitoring for Kubernetes

Watch the video

About Intel

Intel Corporation is a multinational corporation and technology company headquartered in Santa Clara, California. It is one of the world's largest manufacturers of semiconductor chips by revenue, and a developer of the x86 series of instruction sets found in most PCs. Its purpose is to "create world-changing technology that improves the life of every person on the planet".

About Ericsson

Telefonaktiebolaget LM Ericsson is a multinational networking and telecommunications company headquartered in Stockholm, Sweden. Ericsson specializes in infrastructure, software, and services in information and communications technology for telecoms service providers and enterprises, including 3G, 4G, and 5G equipment, and IP and optical transport systems.

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