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Microsoft Surface

Snapdragon

Microsoft Surface powered by Snapdragon:

Meeting the demands of today's IT teams

Surface Copilot+ PCs powered by Snapdragon® deliver more options for flexible workforces

Modern workloads are reshaping IT buying decisions

Secure, high-performance, mobile-friendly computers are essential for productivity, whether employees are working in the office, at home or out and about.

Yet while hybrid working promises more flexible and better employee experiences, it also creates new IT demands.

Today's hybrid workforces are highly mobile and unwilling to compromise on speed of performance and the battery life of their devices when they are unplugged from mains power.

Organisations are also seeing cost pressures. Sourcing energy-efficient, secure devices with longer refresh cycles not only lowers costs but also supports sustainability goals. Further cost and carbon savings can be achieved by consolidating hardware into a single powerful PC that offers both laptop and tablet capabilities, eliminating the need to carry two separate devices.

Microsoft Surface powered by Snapdragon meets the demands

Processor architecture now plays a decisive role in device cost, performance, AI capability and security, making it a critical factor for IT buyers. Surface devices powered by Snapdragon processors expand choice for enterprises, helping them to closely match devices to employee needs.

Copilot+ PCs are a new category of Windows PCs designed to enable advanced AI experiences directly on the device enabled by a powerful (40+ TOPS) AI-processor. Surface Copilot+ PCs powered by Snapdragon bring these capabilities together with exceptional mobility, performance and battery efficiency for modern hybrid work environments.

In this paper, we explain why processor architecture is an important consideration in the selection of devices, and how Microsoft Surface Copilot+ PCs powered by Snapdragon silicon deliver fast, intelligent Windows performance alongside powerful on-device AI. These devices enable new employee experiences while running the apps people already rely on, helping teams work more efficiently.

Why choice in processor architecture matters

Processor architectures define the fundamental design rules for how a processor works – how it uses instructions, manages power and runs software.

For decades, nearly all Windows PCs have relied on silicon based on the x86 processor architecture. Using a Complex Instruction Set Computing (CISC) design, x86 processors can execute multistep operations in a single instruction to run heavy workloads. Furthermore, the long history of x86 in the market allows this architecture to provide backwards compatibility for software.

However, Microsoft is committed to silicon diversity in the Windows ecosystem. Its latest Surface Copilot+ PCs are powered by Snapdragon silicon which runs applications and Windows on ARM, offering organisations practical options that enable them to closely match devices to user needs.

ARM in a nutshell

ARM is a broadly adopted processor architecture, with more than 250 billion chips[1] powering everything from IoT devices to supercomputers. Rather than manufacturing chips itself, ARM licences its core designs to silicon providers, for use in their own products.

Originating in the 1980s, ARM stands for Advanced RISC Machines and defines how a processor executes instructions. Its Reduced Instruction Set Computer (RISC) design enables processors to use simpler and fewer instructions for faster, more efficient performance.

ARM architectures provide a strong balance of performance, security and energy efficiency, helping reduce power consumption and extend battery life.

The story behind Snapdragon

The Snapdragon processor originated with mobile phones, where power efficiency is critical.

Unlike traditional PCs, smartphones cannot rely on fans, energy hungry processors, or large batteries, requiring performance to be delivered within strict power and thermal limits.

To meet these constraints, Snapdragon compute processors were engineered with high instruction efficiency, advanced low-power states, and a highly integrated System-on-Chip (SoC) architecture. This mobile-first design philosophy underpins Snapdragon's performance-per-watt advantage.

As a result, Windows devices powered by Snapdragon run cooler and maintain consistent performance, even when unplugged[2]. For users, this translates into a more comfortable device and a smoother experience that better supports modern, mobile work styles.

A good example of these capabilities is the Microsoft Surface Pro 12-inch[3]. This versatile 2-in-1 device functions as both a tablet and a compact laptop. With its Snapdragon processor and fanless design, the device delivers up to 16-hour battery life[4] and high reliability due to the absence of moving parts. Passive cooling also means it runs silently and enables a sleek, lightweight form factor that is well suited to mobile use.

While Snapdragon is a newer entrant to the PC chipset market, its close collaboration with Microsoft has produced substantial developments across Windows, Surface and Snapdragon technologies. This allows Surface Copilot+ PCs powered by Snapdragon deliver leading performance with broad app compatibility. Today, most enterprise applications run natively on Snapdragon powered Surface devices or smoothly via emulation. For the applications that do not yet, Microsoft supports software developers with making their applications support ARM.

Surface Copilot+ PCs: The innovation continues

Microsoft created Surface with a single goal: to show what is possible when hardware and Windows are designed together. This approach delivers the best Windows experience while pioneering powerful technologies.

Innovations along the way include 2-in-1 form factors, touch-input, pen-input, Windows Hello sign in, Windows on ARM and most recently, on-device AI with Surface Copilot+ PCs powered by Snapdragon.

Building on this foundation, Surface Copilot+ PCs leverage Snapdragon silicon to unlock the potential of AI. At the heart of Snapdragon is a SoC design, which integrates most computer components – including processors, memory, display controller and communications interfaces – onto a single piece of silicon. Because everything sits on one chip, data paths are shorter, latency is lower and less energy is lost moving data around.

The SoC also offloads tasks from the CPU to specialised processors: the Graphics Processing Unit (GPU) handles graphics, video playback and display output; modern Neural Processing Unit (NPU) have sufficient power (40+ Trillion Operations Per Second, TOPS) to power AI tasks such as Windows Studio Effects, Click-To-Do, fluid dictation, live captions and image recognition; while the Microsoft Pluton security processor manages security functions.

This combination of integration and task specialisation boosts performance without increasing clock speed, while enabling thinner, lighter devices with longer battery life. By combining Snapdragon mobile-first efficiency with Surface innovation, these PCs deliver a leading windows experience that meets the demands of modern workforces and simplifies IT management.

6 ways Surface powered by Snapdragon fits modern workplace needs

Raising productivity

Surface Copilot+ PCs powered by Snapdragon deliver sustained performance[2] even when unplugged, with all-day battery life and unmatched reliability enabled by Microsoft's control of the entire Surface stack including hardware, firmware and software.

Leading AI performance

Dedicated NPUs and high-performance architecture enable fast, on-device AI. The Qualcomm® Hexagon™ 45 TOPS NPU in the Snapdragon platform powers capabilities such as handwriting recognition, real time translation and offline Microsoft 365 Copilot functionalities like summarize and rewrite. As developers tap deeper into NPU capabilities, users will see even greater gains in overall experience.

Unrivalled cost effectiveness

Surface delivers the highest returns per device through improved employee productivity, streamlined IT management and deployment, as well as an average residual value 36% higher than other Windows-based PCs.[5]

Enhanced security

Surface implements chip-to-cloud protection with the Microsoft Pluton processor, embedding security directly into the SoC and serving as the Trusted Platform Module (TPM). TPM 2.0 strengthens protection by preventing unauthorised firmware or OS tampering. Combined with zero trust principles, on-device AI and enabling integrated Microsoft security tools in Windows by default, this approach reduces reliance on external security solutions, streamlining protection and reinforcing compliance.

Supporting sustainability

Surface powered by Snapdragon consumes less energy, offers best performance per watt[6], and has extended lifespan[7]. Their versatility enables device consolidation, reducing the need for multiple devices and accessories.

Consistent device management

Deployment through integrated solutions such as Microsoft Intune[8] and Autopilot saves time and reduces errors. Streamlined management also reduces the need for support, saving costs and time in IT operations.

Surface saves time and money

Surface has the highest product satisfaction of any Windows device[9]:

Reliability
49% fewer helpdesk incidents

Productivity
11.6 hours saved from increased mobility

Security
34% fewer security incidents

Cost-effectiveness
$3,500 saved per device

Sustainability
21% less energy consumed

Device management
25% less staff time

Microsoft Surface runs the apps that enterprises use daily

Microsoft works closely with Snapdragon and software developers so that Copilot+ PCs powered by Snapdragon run the apps employees use every day.

This commitment has led to substantial improvements in app compatibility. Qualcomm research, based on Windows telemetry provided by Microsoft, shows that 95% of the top 200 business apps run natively on Snapdragon powered devices, covering productivity, security, creativity, social media, web and accessibility.

For the small percentage of apps built for x86 processors that do not run natively, Microsoft Prism's emulation enables nearly all of the top 200 apps to run seamlessly on Snapdragon powered devices. Only 1% of the top 200 apps remain unsupported, typically those relying on a hardware driver to work, such as older printers. In these cases, other solutions like universal printer drivers overcome most issues. Compatibility of legacy, Line-of-Business and other applications must always be checked in advance.

The magic of emulation – how Microsoft Prism works

For the declining minority of apps that don't yet run natively on 'Windows on ARM', Microsoft's Prism ensures they perform smoothly.

Prism translates x86 instructions into ARM code on the fly, optimising performance and reducing CPU load. The emulation engine runs in the background, detecting and launching x86 and x64 apps without user intervention. As far as the software knows, it's not being emulated, until it needs to know, such as when calling APIs.

With Surface Copilot+ PCs, emulated apps usually run faster than they did on the older machines they replace, and most users won't even realise they're using emulation.

4

reasons enterprises can be confident their apps will run on Microsoft Surface powered by Snapdragon

Compatibility support for Independent Software Vendors (ISV):

Via the App Asure programme[10] Microsoft provides ARM advisory services to software developers, at no additional cost, to enable them to ensure app compatibility. The service combines engineering support, tooling and best practice planning so ISVs can release ARM native versions of their applications against minimal effort.

Compatibility support for large organisations

The Microsoft Surface Technical Acceleration and Support (STAAS) programme helps streamline large scale Surface deployments through best practice planning and enhanced technical support. Dedicated Microsoft experts guide Proof of Concept (PoC) projects and the roll out of Windows on ARM. This is a nomination-only programme for organisations with a direct relationship with Microsoft sales organisation.

Compatibility support for all organisations

Surface resellers can advise organisations on app compatibility and help assess readiness for Surface Copilot+ PCs powered by Snapdragon. Partners support organisations in planning and running Proof of Concept (PoC) deployments, testing mission-critical applications and validating compatibility within existing IT environments. Where required, partners can also align with Microsoft and Qualcomm technologies to address application compatibility questions.

Works on Windows catalogue

Further insight comes from independent ARM-specialist services provider Linaro, which is independent of Microsoft and Snapdragon. Linaro maintains the site www.worksonwoa.com that provides information about apps on Windows on ARM. The catalogue offers a quick guide to the compatibility of thousands of apps.[11]

Running an effective Proof of Concept

Testing is an essential step in the buying process to overcome perceived barriers and assure an enterprise that Surface Copilot+ PCs powered by Snapdragon will meet their needs and help boost productivity.

While the enterprise is responsible for running the Proof of Concept (PoC), Microsoft, Snapdragon and their resellers provide support in planning, setting up and running PoCs, including the loaning of Surface Copilot+ PCs powered by Snapdragon.

A PoC can show that most of an enterprise's software will work well with Windows on Snapdragon devices. A PoC also demonstrates the ease of configuration and management of Surface Copilot+ PCs through modern endpoint management systems, overcoming workload concerns that IT teams may have about configuring and managing Surface devices powered by Snapdragon.

The basics of a Surface powered by Snapdragon PoC

1

Step 1: Establish the requirements

Define mission-critical apps

List the apps in a test plan

If necessary, ask partner for support with template

2

Step 2: Prepare the test

Obtain test devices

Deploy and manage the devices with Autopilot/ Intune and/or apply corporate image

3

Step 3: Run the pilot

Test the apps

Run Snapdragon enterprise readiness tool

Collect user feedback

Raise compatibility questions with reseller and/or Microsoft or Qualcomm Technologies

4

Step 4: Wrap up

Collect data

Analyse results

List the findings

Contact Microsoft or reseller to implement broader roll out

Take the next step

While x86 is the most used Windows architecture, increased adoption of Snapdragon processors provides more choice, allowing enterprises to better match employee needs.

This gives organisations more ways to boost productivity, improve the user experience and reduce costs.

AI-powered PCs are transforming everyday work. Surface Copilot+ PCs powered by Snapdragon enable people to work more effectively using the apps they already rely on.

Contact Microsoft or your Microsoft Surface reseller to discover more about how to set up and run a PoC and what support is available, such as loan Surface Copilot+ PCs for testing.

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[1] Over 250 billion Arm chips have shipped since the first ARM1 processor launched 40 years ago | Tom's Hardware

[2] Performance is based on Cinebench Single Core run in Windows 11 in October 2024. Snapdragon X Elite (X1E-80-100) was tested using a Dell XPS 13 (9345). The Intel Core Ultra 7 256V was tested using a Dell XPS 13 (9350). On battery performance measured on "Balanced" Power Mode in Windows and "Optimized" in Dell Power Manager for both devices. Power and performance comparison reflects results based on measurements and hardware instrumentation of given devices. CPU Performance is based on Geekbench v6.2 Single-Core on Windows 11 OS run in October 2024, Snapdragon X Elite (XIE-80-100) was tested using a Dell XPS 13 (9345) on "Balanced" Power Mode in Windows and "Optimized" in Dell Power Manager. Intel Core Ultra 7 256V was tested using a Dell XPS 13 (9350) on "Balanced" Power Mode in Windows and "Standard mode" in Windows and "Optimized" in Dell Power Manager. The AMD Ryzen AI 9 HX 370 was tested using an ASUS VivoBook S14 (M5406WA) on "Balanced" Power Mode in Windows and "Standard mode" in MyASUS. Power and performance comparison reflects results based on measurements and hardware instrumentation of given devices.

[3] Surface Pro for Business | Microsoft

[4] Based on video playback test. Battery life varies significantly based on device configuration, usage, network and feature configuration, signal strength, settings and other factors. See aka.ms/SurfaceBatteryPerformance for details.

[5] The Business Value of Microsoft Surface

[6] Tasks tested include Teams video calls, local video playback, YouTube streaming, web browsing, and Microsoft 365. Battery life rundown was measured while running UL Procyon Battery Life Office Productivity run in Windows 11 in October 2024. Snapdragon X Elite (X1E-80-100) was tested using a Dell XPS 13 (9345). The Intel Core Ultra 7 256V was tested using a Dell XPS 13 (9350). On battery performance measured on "Best Power Efficiency" Power Mode in Windows and "Optimized" in Dell Power Manager for both devices. Power and performance comparison reflects results based on measurements and hardware instrumentation of given devices. CPU Performance is based on Geekbench v6.2 Single-Core on Windows 11 OS run in October 2024. Snapdragon X Elite (XIE-80-100) was tested using a Dell XPS 13 (9345) on "Balanced" Power Mode in Windows and "Optimized" in Dell Power Manager. Intel Core Ultra 7 256V was tested using a Dell XPS 13 (9350) on "Balanced" Power Mode in Windows and "Standard mode" in Windows and "Optimized" in Dell Power Manager. The AMD Ryzen AI 9 HX 370 was tested using an ASUS VivoBook S14 (M5406WA) on "Balanced" Power Mode in Windows and "Standard mode" in MyASUS. Power and performance comparison reflects results based on measurements and hardware instrumentation of given devices. Battery life varies significantly with device, settings, usage, and other factors.

[7] The Business Value of Microsoft Surface, IDC White Paper

[8] Microsoft Intune licensing required

[9] The Business Value of Microsoft Surface, IDC White Paper

[10] https://learn.microsoft.com/en-us/microsoft-365/fasttrack/windows-365-and-app-assure#arm-advisory-service

[11] https://www.worksonwoa.com/en/