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Beyond the Chip: How Knowledge-Based AI Export Controls Are Reshaping the Supply Chain

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The year 2025 saw a dramatic and turbulent transformation in the regulatory landscape governing the export of advanced computing technology, with policy shifts from both the Biden and Trump administrations significantly broadening compliance obligations across the entire semiconductor and AI hardware supply chain. The year began with the Biden administration's Framework for Artificial Intelligence Diffusion Interim Final Rule. This rule immediately implemented new controls on AI by regulating the model weights of advanced, closed-source Large Language Models (LLMs) and expanded the performance thresholds for Integrated Circuits (ICs). Specifically, it incorporated metrics like Total Processing Performance (TPP), subjecting certain cutting-edge chips to strict worldwide licensing requirements and imposing a "rebuttable presumption" of control on ICs handled by third-party assembly and test firms.

This initial regulatory structure was quickly disrupted in May 2025 when the Trump administration rescinded the Diffusion Rule and instituted new Policy Statements focusing aggressively on end-use enforcement. This shift fundamentally changed the control mechanism by placing stringent, knowledge-based restrictions on the AI training ecosystem. New guidance emphasized that U.S. persons providing Infrastructure-as-a-Service (IaaS), or cloud computing access, could now incur severe licensing requirements if they had "knowledge" that their services would be used to train AI models for parties in restricted countries. This action dramatically increased the due diligence requirement for downstream hardware providers, such as server manufacturers and data center operators, extending compliance risk to the final assembled server and cloud service.

The regulatory impact further extended into fabrication. In August, the Trump administration moved to eliminate certain standing authorizations under the Validated End-User (VEU) program for Semiconductor Manufacturing Equipment (SME) producers. By removing this provision, non-U.S. SME firms incorporating U.S. origin content that previously exported advanced equipment license-free to certain foreign foundries are now subjected to heightened U.S. licensing requirements. As the U.S. and China continue to compete for AI dominance and control over its distribution, SME manufacturers and all parties in the supply chain should anticipate further changes to U.S. export control laws as the regulatory environment remains highly volatile.

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