National Federated AI Infrastructure Network

State Data Centers Linked via Protocol 402
A Federated National Architecture for Artificial Intelligence Infrastructure

A framework for expanding national artificial intelligence infrastructure through federated state-based compute networks.

Prepared for discussion with federal and state policymakers on artificial intelligence infrastructure, energy systems, and digital economic development by:

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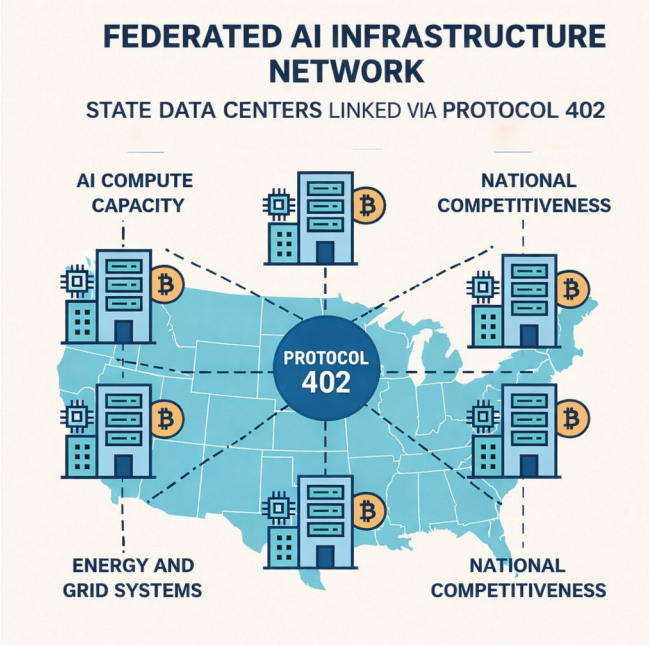
Executive Summary

Artificial intelligence infrastructure is a foundational layer of national economic competitiveness, energy demand, and technological leadership. Today, much of the United States' large-scale AI compute capacity is concentrated within a limited number of hyperscale facilities operated by a small number of private technology companies.

A complementary model is available. The National Federated AI Infrastructure Network proposes a distributed architecture linking state-based sovereign AI data centers through a shared coordination layer referred to as Protocol 402. This approach expands national compute capacity while improving resilience and enabling states to participate directly in the AI economy.



South Carolina policymakers and industry stakeholders are currently exploring initiatives to modernize the state's data center and digital infrastructure environment. With targeted federal partnership or pilot support, South Carolina could serve as an early demonstration site for federated AI infrastructure aligned with national priorities related to artificial intelligence development, energy infrastructure modernization, and economic competitiveness.

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Key Points

• Federated national architecture linking state-based AI data centers
• Protocol 402 coordination layer enabling distributed compute infrastructure
• Alignment with national priorities for AI capacity, energy systems, and economic competitiveness
• South Carolina positioned as an early pilot opportunity

The Interstate Highway System for AI Compute

Artificial intelligence infrastructure is emerging as a strategic layer of national infrastructure. The United States built the Interstate Highway System to connect state transportation infrastructure into a unified national network that accelerated commerce and economic development for generations.

A federated network of state-based sovereign AI data centers connected through a shared coordination protocol can serve as the digital equivalent of the interstate system. This architecture expands national compute capacity while enabling states to participate directly in the next generation of technological and economic development.

Strategic Context

Most large-scale AI compute capacity in the United States is currently concentrated within a limited number of hyperscale facilities operated by a small number of technology companies.

At the same time, global competitors are rapidly expanding sovereign AI infrastructure supported by coordinated national energy and technology policy. These efforts are increasingly coordinated at the national level, integrating compute infrastructure with long-term energy and industrial policy frameworks. Distributed compute capacity is therefore becoming an increasingly important element of national competitiveness.

While hyperscale investment has accelerated innovation, this concentration introduces challenges including infrastructure concentration risk, regional imbalance in economic opportunity, and increasing pressure on energy and grid systems supporting large compute loads.

Protocol 402 Architecture

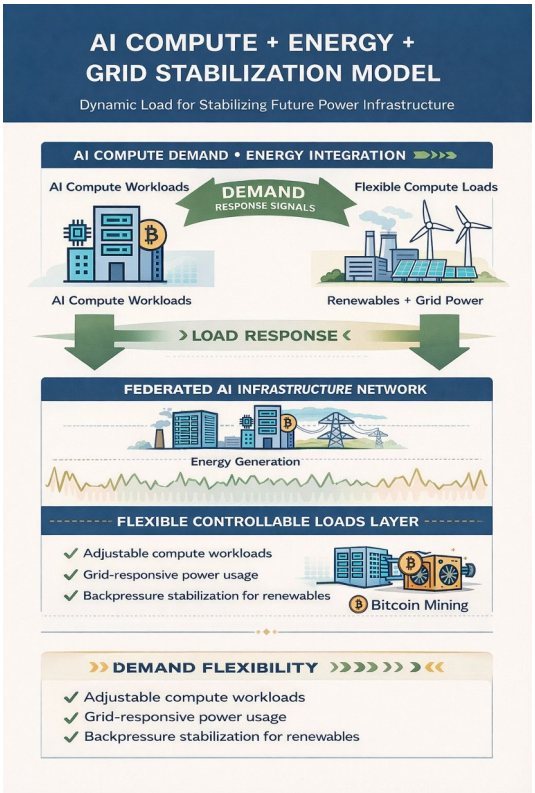
Protocol 402 provides a coordination framework linking state-based AI data centers into a distributed national compute network.

Each participating node may include:
• high-performance AI compute infrastructure
• secure data governance aligned with United States policy frameworks
• integration with regional energy and grid infrastructure
• interoperability with other sovereign compute environments.

Protocol 402 also supports a cryptographically verifiable coordination layer enabling transparent infrastructure usage accounting, auditable compute allocation, and trusted settlement between participating nodes.

Energy and Infrastructure Alignment

Artificial intelligence data centers are rapidly becoming one of the largest new sources of electricity demand in the United States. Large compute systems can also function as flexible and controllable energy loads capable of responding dynamically to grid conditions.



When integrated with energy markets and demand response systems, distributed AI infrastructure can absorb excess renewable energy production, reduce load during grid stress events, stabilize energy markets through controllable compute demand, and support development of new power generation infrastructure.

South Carolina Pilot Opportunity

South Carolina policymakers and industry stakeholders are currently exploring initiatives to modernize the state's data center and digital infrastructure environment in order to support next-generation computing and artificial intelligence workloads.

Policy discussions include modernization of data center infrastructure policy, incentives supporting advanced computing facilities, integration of large compute loads with regional energy infrastructure, and partnerships between universities, industry, and government.

With targeted federal partnership or pilot funding, South Carolina could serve as an early demonstration site for federated AI infrastructure illustrating how state-based compute capacity can integrate into a broader national architecture. The following pathways could support near-term evaluation and deployment of federated AI infrastructure in coordination with federal priorities.

National Strategic Impact

Expanded National AI Compute Capacity
Distributed infrastructure increases total United States AI capability.

Infrastructure Resilience
Geographic distribution reduces reliance on centralized hyperscale facilities.

Regional Innovation Growth
States participate directly in the AI economy through infrastructure investment and workforce development.

Energy and Grid Integration
AI infrastructure can function as flexible load supporting modernization of energy systems.

Potential Federal Engagement Pathways

- AI infrastructure pilot programs
- Energy and grid integration initiatives
- Public-private research partnerships
- Digital infrastructure standards development

Conclusion

Just as the interstate highway system connected the nation's physical infrastructure, a federated network of state-based AI data centers can connect the nation's digital infrastructure for the age of artificial intelligence. South Carolina presents an immediate opportunity to demonstrate this model through a state-led pilot aligned with national priorities. This concept is intended to support ongoing federal and state discussions regarding artificial intelligence infrastructure, energy systems, and national competitiveness.