

## Why GAO Did This Study

An internet protocol provides the addressing mechanism that defines how and where information moves across interconnected networks. Increased use of the internet has exhausted available IPv4 address space, spurring the adoption of its successor protocol, IPv6. OMB has required that agencies plan for transitioning from IPv4 to IPv6.

Senate and House reports accompanying the 2020 National Defense Authorization Act included provisions for GAO to review DOD's IPv6 transition planning efforts. This report (1) identifies past DOD attempts to transition to IPv6, (2) examines the extent to which DOD has completed OMB's planning requirements for its current transition effort, and (3) identifies DOD's progress in completing its own IPv6 transition activities. To do so, GAO assessed DOD's IPv6 transition plans and documentation against OMB's requirements, reviewed DOD's planned IPv6 transition activities, and interviewed agency officials.

## What GAO Recommends

GAO is making three recommendations to DOD to develop an inventory of IP compliant devices, an estimate of the IPv6 transition costs, and an analysis of IPv6 transition risk. DOD agreed with the recommendations to develop a cost estimate and risk analysis, but disagreed with the recommendation to develop an inventory of IP-compliant devices. Nevertheless, GAO believes the recommendation to develop an inventory is warranted.

View [GAO-20-402](#). For more information, contact Vijay A. D'Souza at (202) 512-6240 or [dsouzav@gao.gov](mailto:dsouzav@gao.gov).

# INTERNET PROTOCOL VERSION 6

## DOD Needs to Improve Transition Planning

### What GAO Found

The Department of Defense's (DOD) current initiative to transition to Internet Protocol version 6 (IPv6), which began in April 2017, follows at least two prior attempts to implement IPv6 that were halted by DOD. In one effort that began in approximately 2003, DOD initially did make progress implementing IPv6 on its systems, but then the department ended the effort due to security risks and a lack of personnel trained in IPv6. DOD initiated another attempt in response to 2010 OMB guidance. However, this initiative was terminated shortly thereafter, again due to security concerns.

For its current initiative, DOD has not completed three of four longstanding OMB requirements (see table). Without an inventory, a cost estimate, or a risk analysis, DOD's plans have a high degree of uncertainty about the magnitude of work involved, the level of resources required, and the extent and nature of threats, including cybersecurity risks.

### Status of the Department of Defense's (DOD) Efforts to Complete Selected Office of Management and Budget (OMB) Internet Protocol version 6 (IPv6) Transition Planning Requirements, as of March 2020

OMB requirement	Completed?
Assign an official to lead and coordinate agency planning	Yes
Complete an inventory of existing IP compliant devices and technologies	No
Develop a cost estimate	No
Develop a risk analysis	No

Source: GAO analysis of DOD documentation. | GAO-20-402

In February 2019, DOD released its own IPv6 planning and implementation guidance that listed 35 required transition activities, 18 of which were due to be completed before March 2020. DOD completed six of the 18 activities as of March 2020. DOD officials acknowledged that the department's transition time frames were optimistic; they added that they had thought that the activities' deadlines were reasonable until they started performing the work. Without an inventory, a cost estimate, or a risk analysis, DOD significantly reduced the probability that it could have developed a realistic transition schedule. Addressing these basic planning requirements would supply DOD with needed information that would enable the department to develop realistic, detailed, and informed transition plans and time frames.