MOSCOW—A series of high-profile arrests in Russia, purportedly including officers of the country’s secretive Federal Security Service and a cybersecurity expert, has intelligence officials on both sides of the Atlantic trying to unravel a mystery they suspect may be connected to Russian hacking in the U.S.

Russian news media have described the arrests—including at least two intelligence officials at the FSB, the successor agency to the KGB, and an employee at Kaspersky Lab, Russia’s most prominent cybersecurity firm—as being part of a treason case. An employee of Kaspersky Lab was arrested in a string of recent arrests that Russian news media have described as being part of a treason case. PHOTO: PROKOFYEV VYACHESLAV/ZUMA PRESS

Russian officials haven’t publicly confirmed details of the case or the arrests, but local news outlets have reported dramatic details, including the arrest of one of the intelligence officers at an FSB meeting, with the suspect being led away with a bag over his head.

The reports have fueled speculation among Western intelligence officials who have been monitoring the situation closely that the arrests may be tied to allegations that Russia was involved in hacking aimed at influencing the recent U.S. presidential election and an unverified dossier alleging collusion between the Kremlin and the President Donald Trump’s campaign.

The roundup of Russian intelligence officials has the earmarks of a classic mole hunt, some current and former intelligence officials said. But they said there are other plausible explanations why Russian authorities would go after their own spies, including cracking down on government officials who moonlight as hackers-for-hire and may have been jeopardizing ongoing intelligence operations.
The Kremlin has made only a cryptic acknowledgment of the recent arrests. Kremlin spokesman Dmitry Peskov said Wednesday that Russian President Vladimir Putin had most likely been briefed on a cyber-espionage case that has been making headlines in Russia.

“I do not rule out that, as part of [intelligence] reports, information was provided in a timely manner to the president” on the matter, Mr. Peskov said.

The FSB hasn’t spoken publicly about the matter and hasn’t responded to a formal request for comment from The Wall Street Journal.

Kaspersky Lab confirmed that one of its employees had been arrested. A spokeswoman for the Moscow-based firm, a well known provider of antivirus technology, confirmed that Ruslan Stoyanov, the head of an investigation unit at Kaspersky Lab, was arrested.

Mr. Stoyanov, who joined Kaspersky Lab in 2012, worked for the Russian Interior Ministry’s cybercrime unit in Moscow between 2000 and 2006, according to his LinkedIn profile. Mr. Stoyanov couldn’t be reached for comment.

“This case is not related to Kaspersky Lab,” the company said in a statement. “Ruslan Stoyanov is under investigation for a period predating his employment at Kaspersky Lab.”

Russia's cybersecurity sector has come under increased scrutiny following a declassified U.S. intelligence report that alleged that several Russian companies and individuals were involved in cyber intrusions against the Democratic National Committee and the chairman of Hillary Clinton’s presidential campaign.

U.S. intelligence officials also informed Mr. Trump of a separate unverified dossier, compiled by former British spy Christopher Steele and funded by his political opponents, that alleged representatives of Mr. Trump were in contact with Russian officials during the U.S. presidential campaign. Russian officials and Mr. Trump have dismissed the dossier's claims as false.

Current and former intelligence officials have been monitoring the recent arrests in Russia and trying to determine whether the professional backgrounds of some of those arrested are similar to the anonymous Russian sources in the dossier.

The dossier was passed around by many government officials, lawmakers, and journalists in Washington last fall. One former intelligence official said it may have been seen by Russian officials and could have triggered a hunt there for Mr. Steele's sources.

A second former intelligence official noted that one section of the dossier cites a source who is close to Igor Sechin, a confidante of Mr. Putin and now the chairman of energy giant Rosneft. That description is similar to Oleg Erovinkin, a former KGB general who had been one of Mr. Sechin's aides, before he was found dead in Moscow last year.

— James Marson contributed to this article.

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