

INTEL471

REPORT

FROM AEROSPACE TO ASSEMBLY LINES: HOW CYBERCRIMINALS ARE TARGETING MANUFACTURING SUPPLY CHAINS

TLP:CLEAR

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This is a redacted version of an Intel 471 report that was made available on Verity471 in November 2026. To protect sources, Intel 471's direct actor engagements to gain first hand insights and validate actor claims have been removed.

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Key Findings

- **Primary target of threat actors worldwide:** The manufacturing sector absorbed 14.4% of total cybercrime impact in Europe in 2025 and has ranked as the most attacked sector in the U.S. for four consecutive years.
- **Impact of initial access brokers (IABs):** From January to October 2026, IABs offered unauthorized access affecting 172 manufacturing entities — 10% of total worldwide offers Intel 471 tracked during the period. Wholesale offers constituted 66.8% of postings, driven predominantly by vulnerability exploitation at 25% and brute-force attacks at 16.3% targeting exposed remote access and remote desktop services.
- **Leading ransomware and extortion groups:** Manufacturing accounted for 1,379 recorded data extortion and ransomware claims — 16.8% of all monitored victims globally. The most active groups targeting the sector were **Qilin** at 13.6%, **The Gentlemen** at 12.9% and **Akira** at 8.4%, with the industrial products and services industry representing 74.2% of all claims.
- **Disproportionate pressure on small and medium manufacturers (SMMs):** About 68% of monitored ransomware and data extortion victim claims in the sector involved entities with annual revenues under US $50 million.
- **Insights from real-world investigations:** Intel 471 provides an overview of selected real-world use cases of threat activity impacting the aerospace and defense, automotive, industrial products and chemical manufacturing industries to highlight unique operational dependencies, attack surfaces and adversary tactics.

Overview

Defined under the International Standard Industrial Classification of All Economic Activities (ISIC) as the physical or chemical transformation of materials, substances or components into new products, the manufacturing sector serves as the fundamental engine of the global economy. According to the United Nations Industrial Development Organization (UNIDO), industrial production accounted for 20.9% of world gross domestic product (GDP) in 2024 — generating about US $20 trillion in value added, with manufacturing representing 78.7% of that footprint. The sector is also increasingly sophisticated, with higher-tech production driving over 51% of global manufacturing value added (MVA).

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This immense economic concentration, paired with a zero-tolerance threshold for operational downtime, makes manufacturing an exceptionally lucrative target for extortion. Interconnecting enterprise IT with plant floor operational technology (OT) has weakened traditional boundary defenses, exposing inherently insecure legacy controllers and assembly systems to enterprise-level threat vectors and lateral movement.

Financially motivated adversaries actively weaponize this exposure, knowing that halting an assembly or processing line costs millions of dollars per day and creates immense pressure for rapid extortion payouts. Concurrently, the sector's reliance on multitier supply chains introduces critical third-party risk, where a compromise at an interconnected vendor, logistics partner or maintenance contractor provides adversaries with a trusted pivot into core networks or can trigger cascading cross-site operational shutdowns. Furthermore, the risk of having high-value IP leaked or auctioned across illicit underground channels exposes proprietary technical data to competitors, irreversibly devalues years of research and development (R&D) investments and provides threat actors with powerful extortion leverage to compel ransom payments. For the manufacturing sector, cybersecurity is not merely a data protection issue, but an existential operational risk.[1,2]

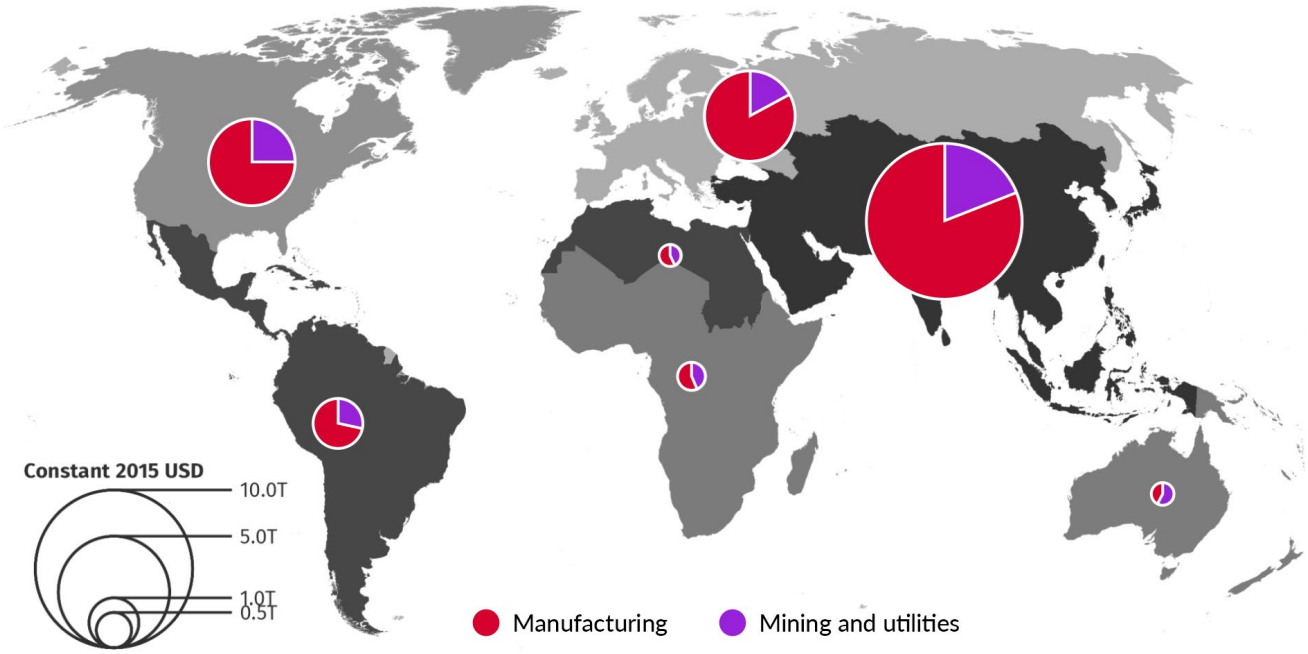


Figure 1: The image depicts the distribution of manufacturing and mining and utilities activity across the world. UNIDO reported the manufacturing accounted for 78.7% of total industrial output in 2024.[2]

According to the European Union Agency for Cybersecurity (ENISA) Threat Landscape 2026 report evaluating activity recorded in 2025, the manufacturing sector accounted for 6.9% of all recorded cyber incidents in Europe, yet it absorbed the highest overall cybercrime impact of any sector at 14.4% and represented the largest share of ransomware deployments at 25.2%. Financially motivated cybercrime drove 61.1% of all regional manufacturing incidents, of which

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ransomware represented 82.8% and data breaches accounted for 14.1%. Unauthorized access served as the primary initial access vector in 80.4% of recorded intrusions, driven predominantly by ransomware groups such as **Qilin**, **Akira** and **SafePay**. Geographically, incident concentration was highest across Europe's primary industrial economies with Germany at 18.1%, Spain at 17.7%, France at 17.6% and Italy at 12.6%.[3]

According to the Cybersecurity Manufacturing Innovation Institute aka CyManII 2026 Manufacturing & Critical Infrastructure Threat Landscape report, manufacturing has remained the most attacked sector in the U.S. for four consecutive years. SMMs, which constitute about 80% of the manufacturing ecosystem, remain severely exposed. These organizations face heightened vulnerability due to resource constraints and a reliance on brownfield OT assets that frequently lack basic logging, network segmentation or effective patch management.[4]

Report Scope, Methodology

This report examines cybercrime threats shaping the manufacturing sector landscape and reviews Information Reports (IRs), Finished Intelligence (FINTEL) products, Breach Alerts, Spot Reports, raw underground channel content and data leak site (DLS) material reported and observed from January 2026 to October 2026. Drawing on Intel 471's human-source intelligence, technical analysis and underground monitoring, we assess activity in areas such as the initial access market and ransomware and data extortion operations. This analytical baseline enables security leadership and technical defenders to benchmark risk across complex digital and physical manufacturing environments.

Coverage follows the manufacturing sector branch of Intel 471's General Intelligence Requirements (GIRs):

GIR code	Sector, industry
GIR 6.1.5	Manufacturing sector
GIR 6.1.5.1	Aerospace and defense industry
GIR 6.1.5.2	Automotive industry
GIR 6.1.5.3	Industrial products and services industry
GIR 6.1.5.4	Chemicals and specialty materials industry

Manufacturing Sector Breach Alert Distribution

A Breach Alert represents reported threat activity associated with an organization but it does not constitute verification of a successful compromise, operational impact or unique security incident. The underlying dataset aggregates public ransomware and extortion claims, IAB listings,

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DLS postings and telemetry derived from actor engagement. Accordingly, the metrics presented below reflect total recorded alerts rather than a vetted census of confirmed cyber intrusions.

For the reporting period, the filtered dataset registered 1,507 Breach Alert records linked to the manufacturing sector. The industry breakdown included:

Industry	Alerts	Share
Aerospace and defense	61	4.1%
Automotive	191	12.6%
Industrial products and services	1,088	72.1%
Chemicals and specialty materials	167	11.1%

These figures measure the distribution of observed alert reporting, not relative industry susceptibility. They are not adjusted for industry size, organization count or collection visibility in this report.

Initial Access Market

A key enabler of unauthorized access is the proliferation of IABs, who are threat actors or groups that specialize in compromising networks via brute-force attacks, malware logs, vulnerability exploits and social engineering. After gaining a foothold, IABs sell the access on underground channels to other threat actors seeking to carry out further attacks.

From Jan. 1 to Oct. 29, 2026, our internal data revealed IABs offered unauthorized access that impacted 172 entities in the manufacturing sector, representing about 10% of all accesses offered worldwide. Manufacturing was the fifth most targeted sector behind professional services and consulting; public; consumer and industrial products; and technology, media and telecommunications. The five most impacted countries in descending order were the U.S., India, Italy, France and Spain. The five most prominent IABs identified during this period were the actors using the **Pirat-Networks**, **Anon-WMG**, **Tamburino**, **IntegraGT** and **Saturned33** handles. Intel 471 categorized 66.8% of this access as wholesale offers involving multiple targets, while the remaining 33.2% was categorized as access to a specified target.

The prevalence of wholesale access is consistent with actors acquiring access through repeatable techniques or vulnerabilities in technologies that multiple organizations use. Once an actor develops an effective exploitation method, the actor can apply that method to additional exposed systems without conducting a separate, extensive reconnaissance effort against each organization. This reduces the effort required to compromise businesses whose size or profile might otherwise offer limited incentive for a dedicated intrusion.

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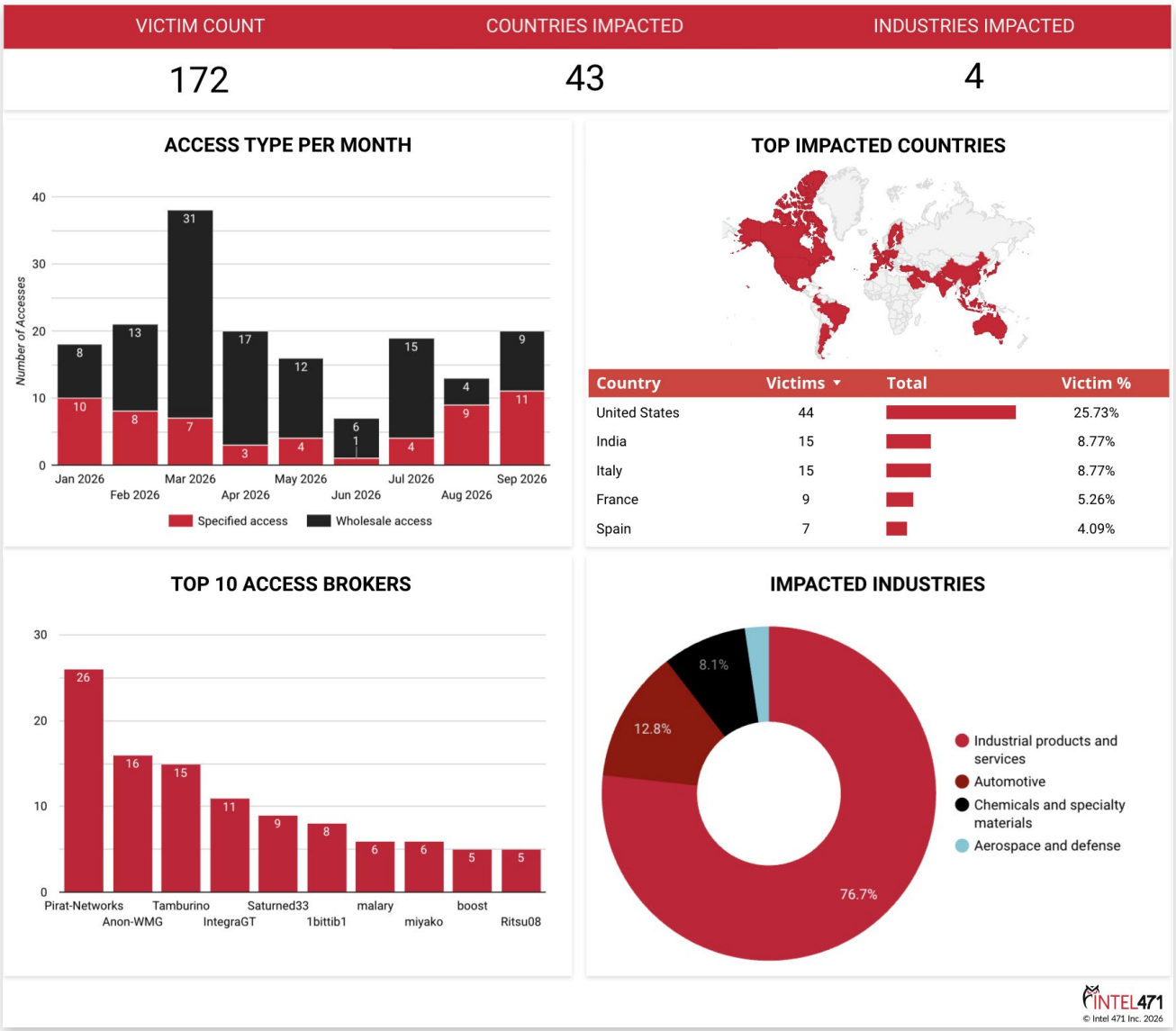


Figure 2: The image depicts the most impacted countries, top 10 access brokers, distribution of impacted industries and quantity of wholesale and specified offers observed in underground channels targeting the manufacturing sector from January to October 2026.

We analyzed the advertised access targeting organizations operating in the manufacturing sector to understand how adversaries obtained their initial foothold. IABs gained initial access by exploiting vulnerabilities in 25% of the cases we examined, while they used brute-force techniques in 16.3% of cases. Actors obtained 10.5% of the advertised access through compromised credentials whose origin was not identified, while information stealers supplied the credentials used to obtain 0.6% of the access. We could not establish an acquisition method for 47.6%. Although the available information does not describe every compromise in equal detail, it demonstrates that vulnerability exploitation remains a substantial source of access targeting manufacturing organizations, alongside access obtained through credential compromise.

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The combination of predominantly wholesale offers and frequent vulnerability exploitation suggests actors can repeatedly find exploitable systems across manufacturing organizations. We assess that gaps in identifying and remediating vulnerable internet-facing applications may help sustain this supply of access. Delays in applying available patches is one possible contributor, but it was not possible to establish whether a fix was available in each case or how quickly organizations responded.

Access offers across the manufacturing sector are typically categorized by claimed corporate revenue, administrative permissions, host volume and access type. Analyzing the specific access mechanism is critical, as the compromised technology dictates an adversary's initial foothold, privilege level and potential lateral reach into production environments. While observed entry vectors spanned remote monitoring and management (RMM) utilities such as AnyDesk and BeyondTrust, remote shells deployed on vulnerable edge systems and information stealer-infected endpoints, perimeter remote access accounted for the majority of access listings. Virtual private network (VPN) services represented the largest share at 28.5% of examined cases, followed by Microsoft Remote Desktop Web Access (RDWeb) at 9.9%, file transfer protocol (FTP) servers at 7.6% and remote desktop protocol (RDP) hosts at 6.4%.

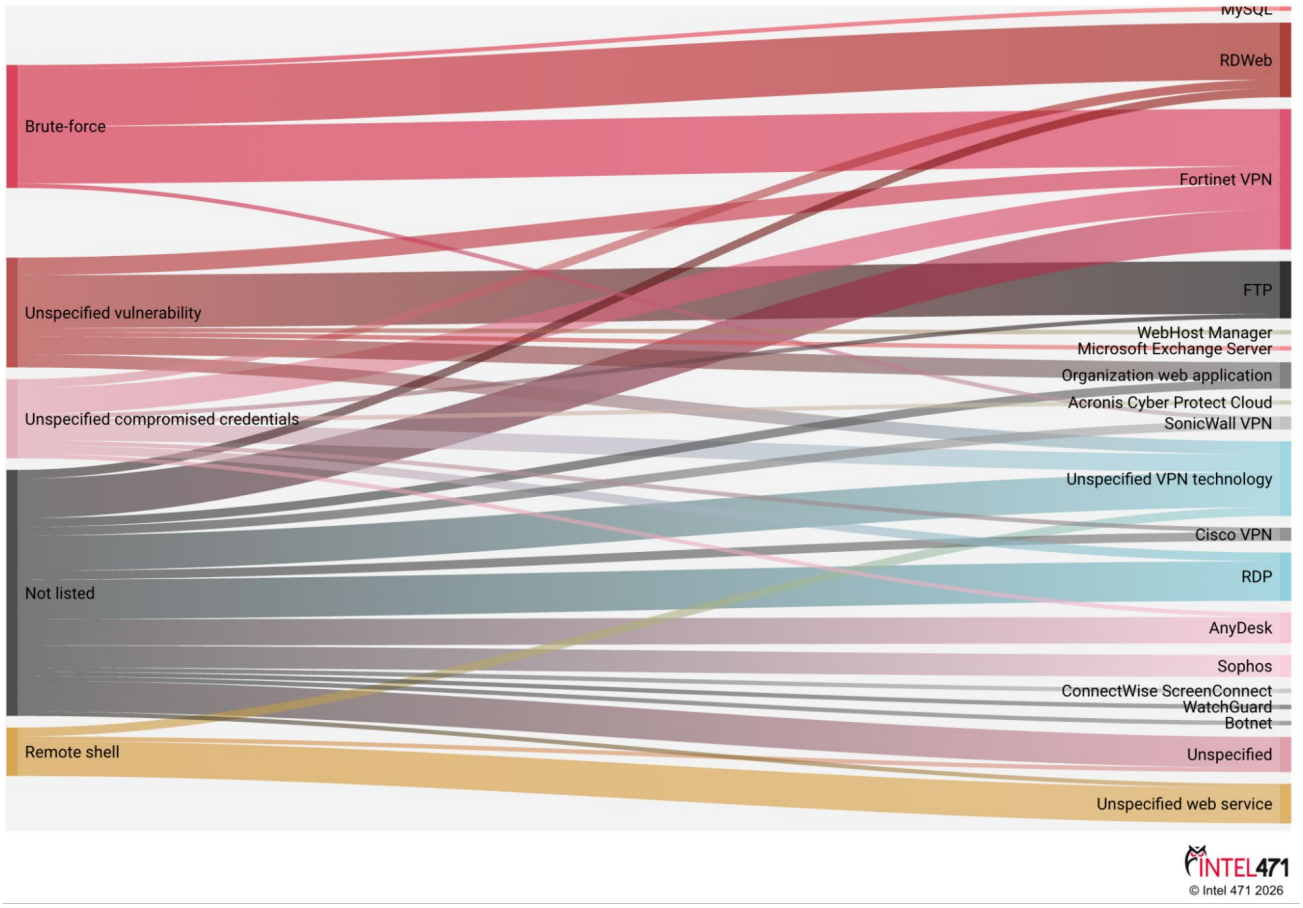


Figure 3: The image depicts a Sankey diagram illustrating the correlation between initial access techniques and targeted technologies.

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The following table outlines two cases investigated during this reporting period, detailing the IABs' handles, communication channels used, advertised terms, claimed victims and technical evidence obtained to corroborate each incident.

Seller, forum	Date of claim, victim	Advertised terms, evidence obtained
miyako, PwnForums	On April 8, 2026, the actor **miyako** offered to sell unauthorized access that allegedly impacted an undisclosed U.S.-based aerospace and defense firm with US $20 billion in annual revenue.	The actor offered remote shell access impacting a Linux-based firewall for US $1,000.[5]
fluffyduck, BreachForums	On Feb. 22, 2026, the actor **fluffyduck** offered to sell unauthorized access that allegedly impacted a U.K.-based automation company.	The actor advertised shell access to the CEO's computer, company databases and infrastructure back-end access for US $25,000, which was subsequently reduced to US $15,000.[6]

Ransomware, Data Extortion Activity

Ransomware and data extortion operators either purchase access from IABs or breach networks directly, subsequently expanding their foothold to stage extortion demands. These operations routinely combine data theft with or without system encryption, exposing victims to both operational downtime and the threatened release of sensitive files. Assessing the threat to the manufacturing sector requires evaluating targeted victim profiles, active threat groups involved and their operational tactics.

During the reporting period, manufacturing was the most targeted sector across ransomware and data extortion activity, accounting for 16.8% of all monitored victims or 1,379 recorded claims. At the industry level, industrial products and services represented the vast majority of activity at 74.2%, followed by chemicals and specialty materials at 11.5%, automotive at 11.3% and aerospace and defense at 3%. The U.S. accounted for the largest share of victims identified through Intel 471's global monitoring, followed by Germany, Canada, Italy and France. These rankings are based on the claims ransomware and extortion groups publish on their DLSs.

We also examined company revenue to assess the size of the manufacturing businesses being targeted. Revenue estimates were available for about 66% of victims. Organizations generating US $10 million–$50 million represented the largest single group with 399 victims, followed by those making US $5 million–$10 million with 189 victims. Mid-sized manufacturers also faced pressure, with 106 victims in the US $50 million–$100 million range and 107 victims generating US $100 million–$500 million. Large multinational corporations generating over US $1 billion accounted for 66 victims, while those at US $500 million–$1 billion represented 38 victims.

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While large enterprises attract the most public attention for outsized, multimillion-dollar extortion payout demands, observed ransomware and data extortion activity extended well beyond major corporations to heavily concentrate on SMMs. This prevalence is consistent with operators selecting targets partly on the basis of available access and the effort required to complete an intrusion rather than company size alone. At the same time, SMMs frequently occupy critical niche roles as essential component specialists and tier suppliers within tightly integrated production ecosystems. This dynamic tilts the extortion calculus heavily in the adversary's favor: bound by rigid delivery contracts with zero tolerance for operational downtime, and sometimes lacking dedicated in-house security personnel to quickly contain complex intrusions, SMMs face immense commercial pressure to settle mid-tier ransom demands rapidly rather than risk business interruption.

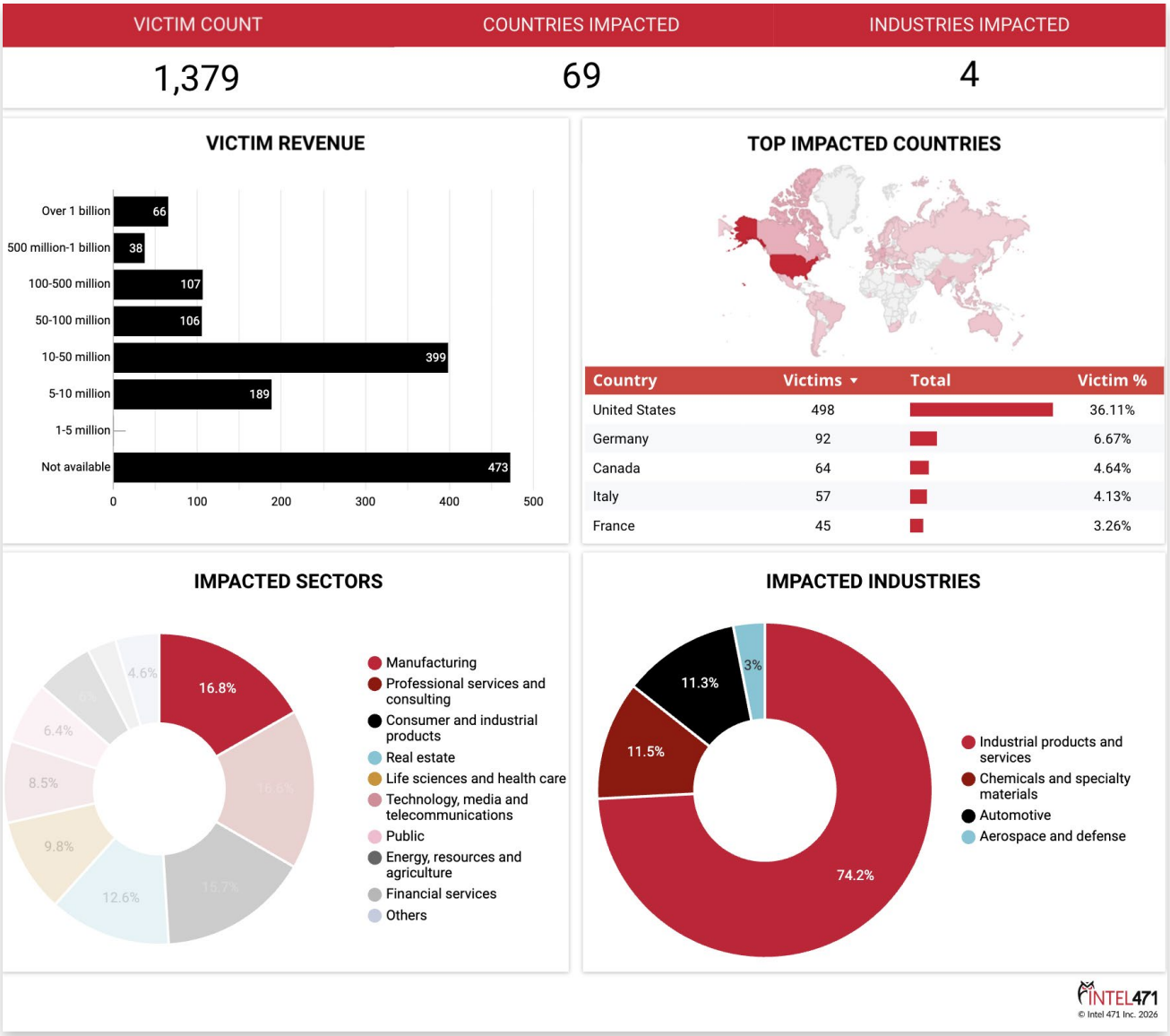


Figure 4: The image depicts a Sankey diagram illustrating the correlation between initial access techniques and targeted technologies.

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Alongside victimology, we examined which ransomware groups were most active against manufacturing organizations. The **Qilin**, **The Gentlemen** and **Akira** groups led this activity. The **Qilin** group accounted for alleged compromises of 13.6% of manufacturing organizations identified in our monitoring, while **The Gentlemen** accounted for 12.9% and **Akira** for 8.4%.

Qilin

The **Qilin** group has operated since 2022 and uses a ransomware-as-a-service (RaaS) model where the core operators develop the ransomware and provide the infrastructure used to manage extortion, while affiliates conduct intrusions and deploy the malware in exchange for a share of ransom payments. This arrangement allows multiple intrusion teams to use the same ransomware program, so Qilin's victims and initial access techniques can vary between affiliates.[8]

Affiliates obtain access through methods that include compromised credentials, exploitation of internet-facing services and phishing. After entry, they conduct reconnaissance, acquire additional credentials and move laterally before exfiltrating data and deploying ransomware. The group can encrypt Linux and Windows systems as well as VMware ESXi hypervisors, allowing affiliates to encrypt both individual systems and the virtualized infrastructure hosting several business applications. Its double-extortion model means a victim may face continued pressure over exfiltrated data even after restoring encrypted systems.[8]

During the reporting period, the **Qilin** group claimed to compromise 188 distinct manufacturing organizations — the most among ransomware groups in the sector. The industrial products and services industry accounted for 141 victims, followed by chemicals and specialty materials with 21, automotive with 21 and aerospace and defense with five.

The Gentlemen

The The Gentlemen RaaS is a newer operation that emerged in August 2025. Affiliates receive 90% of ransom payments and manage their own negotiations with victims. This arrangement gives participating intrusion teams considerable responsibility for monetizing attacks, rather than leaving negotiations entirely to the core operators. They conduct intrusions that combine data exfiltration and encryption, with particular attention to acquiring administrative privileges and disabling security and recovery tools before deploying ransomware. The group has been the second most active ransomware operation against manufacturing organizations in 2026 according to our monitoring.[9]

Its intrusion methods include the use of compromised credentials and exposed remote access services, including VPN and firewall interfaces. Once inside a network, operators seek administrative accounts, move between systems and interfere with endpoint protection and backup services. They also use legitimate remote administration and file transfer software, including AnyDesk, Rclone and WinSCP. This combination allows them to maintain access and exfiltrate information using tools that may also be present in legitimate IT operations.[9]

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Intel 471 gained additional insight into the group from internal conversations leaked in May 2026. The material included guidance on configuring Fortinet FortiGate VPN access, discussions of controlling ESXi hosts through vCenter administrative access and a Veeam PowerShell script intended to stop backup jobs and erase tape media. Members also discussed calling and messaging victims and contacting their customers to increase extortion pressure.[9]

During the reporting period, the **The Gentlemen** group claimed to compromise 179 distinct manufacturing organizations — second among ransomware groups in the sector. The industrial products and services industry accounted for 137 victims, followed by chemicals and specialty materials with 23, automotive with 14 and aerospace and defense with five.

Akira

The **Akira** group was first observed in March 2023 and also operates a RaaS model in which affiliates use shared ransomware and extortion infrastructure to conduct attacks. Intel 471 reporting describes private collaboration channels used by participating intrusion teams, providing insight into how the operation coordinates the skills required to progress from initial access to extortion.[10]

Affiliates acquired compromised credentials through cybercriminal forums and marketplaces and exploited vulnerable SonicWall VPN services. Post-compromise activity follows the standard ransomware operator playbook techniques and includes network reconnaissance, credential theft, privilege escalation, disabling security software and deleting Windows shadow copies.

During the reporting period, the **Akira** group claimed to compromise 117 distinct manufacturing organizations — third among ransomware groups in the sector. The industrial products and services industry accounted for 87 victims, followed by chemicals and specialty materials with 14, automotive with 13 and aerospace and defense with three.

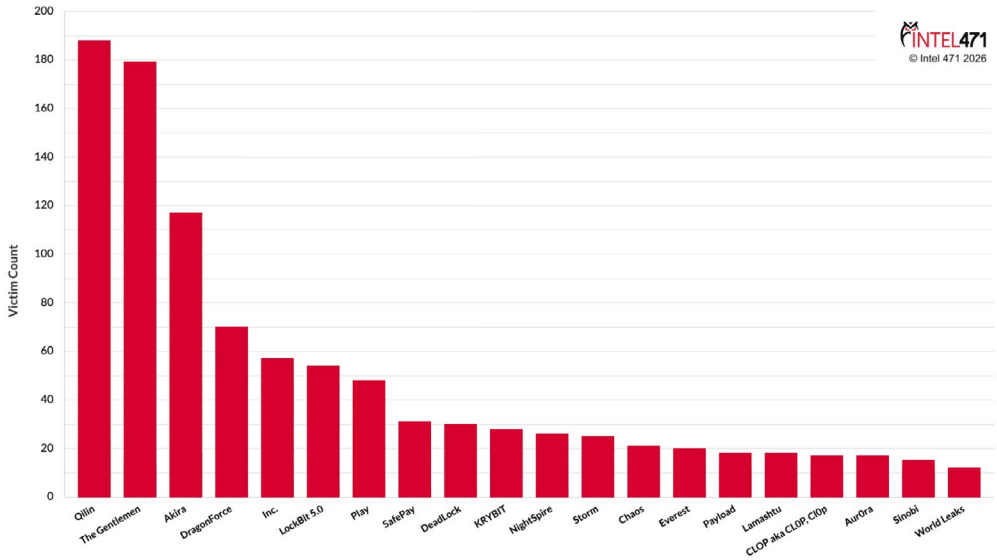


Figure 5: The image depicts the top 20 ransomware and data extortion groups targeting organizations in the manufacturing sector from January 2026 to October 2026.

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Industry Case Studies

While macro-level telemetry on IAB offers and data extortion operations illustrates the systemic pressure facing the broader manufacturing sector, aggregated metrics can obscure the distinct operational dependencies, attack surfaces and adversary motivations within specific subindustries. The following sections examine selected use cases, investigations and threat activity across the aerospace and defense, automotive, industrial products and services, and chemicals and specialty materials industries.

Aerospace, Defense

Intel 471 investigated threat activity concerning aerospace manufacturers, defense contractors, relevant suppliers and associated space or military organizations.

FortiBleed campaign compromises Ukrainian defense entity

In July 2026, we investigated and discovered the widespread FortiBleed credential harvesting campaign facilitated a deeper intrusion into Aselsan Ukraine. Execution logs and Python scripts analyzed demonstrate evidence of data exfiltration from an internal company file server to an external staging host. One recorded log captured at least 1,200 files totaling about 1.04 GB, with subsequent collection runs transferring additional proprietary assets. Exfiltrated files included procurement correspondence, technical maintenance logs and restricted engineering documentation related to the Korkut self-propelled air defense gun system, alongside a compromised Aselsan FortiGate firewall configuration file.[11]

Compromised operations, maintenance account enables prolonged access, exfiltration impacting Chinese research entity

A report we published in April 2026 investigated an illicit offer the actor **airborneshark1** posted on the DarkForums cybercrime forum. The actor claimed to exfiltrate data and offered unauthorized access to the China-based National Supercomputing Center in Tianjin (NSCC) at the nscc-tj.cn website.[12]

Automotive

Intel 471 examined threat activity concerning automotive manufacturers and their suppliers, including alleged exploitation of customer-facing applications and exposure of vehicle development information.

Alleged authorization flaw enables access to BMW-related records

A report we published in May 2026 examined the actor **xpl0itrs'** offer of exploit code and about 800 documents allegedly obtained from BMW Group.[13]

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Alleged supplier breach exposes Lucid vehicle project information

In May 2026, we reported the actor **zestix** advertised a proprietary dataset allegedly exfiltrated from the Taiwan-based electronics manufacturer Pegatron Corp. at pegatroncorp.co, reportedly a key supplier to electric vehicle (EV) manufacturer Lucid Motors.[14]

The stolen repository included unencrypted engineering specifications. The actor highlighted the dataset included technical intellectual property.

According to the offer, the stolen repository included 416 unencrypted files totaling about 4.65 GB of engineering specifications and production assets primarily tied to Lucid's Gravity and Air vehicle programs. The actor highlighted the dataset included technical intellectual property rather than customer records or personally identifiable information (PII), explicitly framing the data for direct use in computer-aided design (CAD) environments such as SolidWorks and Computer-Aided Three-Dimensional Interactive Application (CATIA). The data allegedly included:

- **Production CAD schematics and board layouts:** Complete 3D CAD models and 2D assembly drawings for high-voltage and electronic architectures, including the Gravity's AC junction box (ACJB), center information displays (CID) and instrument clusters (IC). The listing also included board-level schematics, Gerber files and pick-and-place data for the telematics control unit (TCU), as well as layout files for the SVCU 2.0 module supporting advanced driver assistance systems (ADAS).
- **Proprietary engineering and sourcing records:** Engineering statements of work (ESOW), preliminary bills of materials (BOM), printed circuit board assembly (PCBA) designs and automotive validation protocols adhering to LV-124 and IPC-A-610 standards.
- **Diagnostics and security standards:** Diagnostic statements of work, unified diagnostic services (UDS) reprogramming guides, supplier quality documentation and internal cybersecurity specifications.

On Aug. 8, 2026, the **SovCali** data extortion group listed Lucid Group Inc. on its DLS, with Lucid Motors formally addressing the incident Aug. 21, 2026, in an official statement that confirmed one of its vendors had suffered a cybersecurity event. The company clarified that the compromised vendor lacked access to customer databases or systems capable of interfering with vehicle operations or core business functions and informed that vehicle production and retail activities remained unaffected. Lucid stated it was coordinating with third-party investigators and law enforcement to protect its intellectual property and pursue legal remedies.[15,16]

While a connection between **zestix** and **SovCali** remains unconfirmed, this event exemplifies the lifecycle of supply chain extortion in modern manufacturing. An intrusion at an upstream technology supplier provided adversaries with immediate access to proprietary design data.

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Industrial products, services

Intel 471 examined threat activity concerning industrial manufacturers and equipment suppliers, including purported supplier portal compromise, attempted movement into internal systems and ransomware-associated data theft.

Nitrogen ransomware group exfiltrates 8 TB of data from Foxconn

In May 2026, the Taiwan-based electronics manufacturer Hon Hai Precision Industry Co. Ltd. dba Foxconn suffered a massive data breach orchestrated by the **Nitrogen** ransomware group. The company acknowledged the incident and stated attacks impacted several of its manufacturing facilities in North America. The group allegedly exfiltrated 8 TB of data that included internal project documentation, technical drawings and schematics related to multiple billion-dollar clients and provided samples of data allegedly exfiltrated as proof of the claim.[18]

Chemicals, specialty materials

Intel 471 examined threat activity concerning chemical manufacturers and distributors, including alleged employee endpoint compromise and the attempted sale of access to corporate networks.

Actor engagement reveals alleged employee endpoint access at Wanhua Chemical

In October 2026, Intel 471 reported the actor **Marge** was actively recruiting social engineering specialists to obtain initial network access for downstream ransomware operations.[19]

Assessment

No major change is expected in the current threat landscape for financially motivated adversaries targeting manufacturing companies. Threat actors will continue to target the sector at elevated rates, concentrating extortion campaigns on SMMs opportunistically. Rather than exclusively pursuing large multinational enterprises, data extortion and ransomware operators recognize that middle market entities bound by strict just-in-time (JIT) production schedules and tight operating margins yield faster, less-resisted payouts. Threat actors exploit this operational fragility through multilayered extortion, pairing the threat of compounding financial losses from halted assembly or continuous processing lines with the theft and illicit auctioning of proprietary intellectual property, including CAD schematics, circuit board layouts and specialized chemical formulations.

This extortion model is amplified by the sector's reliance on fragile perimeter architectures and legacy OT environments. IABs and extortion groups systematically exploit exposed

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perimeter networking appliances, vendor-managed remote access gateways and compromised O&M credentials to establish initial footholds. Inside production networks, the presence of legacy OT assets, which routinely lack native audit logging, automated patching or modern authentication, leaves control environments highly exposed. Furthermore, deeply integrated industrial supply chains mean threat actors do not need to compromise an original equipment manufacturer (OEM) directly. Breaching an upstream electronics supplier or engineering contractor grants adversaries the design files and operational data necessary to extort the downstream enterprise.

Defending against these threats requires manufacturing organizations to transition from perimeter-only defenses toward structural operational decoupling and proactive threat visibility. Industrial enterprises and their supplier networks must enforce strict network segmentation between corporate IT and plant floor OT domains, enforce multifactor authentication (MFA) across external vendor access pathways and deploy hardware-level compensating controls around unpatchable brownfield controllers. Cyber threat intelligence (CTI) programs should incorporate visibility into underground channels to identify early signs of threat activity. Finally, incident response playbooks must account for third-party supply chain exposure, establishing enforceable vendor security standards alongside crisis management protocols designed to maintain minimum viable production levels during enterprise IT outages.

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