ISP Router Security Insights: ARRIS G54 - Comcast Evaluation

Executive Summary

This document presents a comprehensive evaluation of the ARRIS G54 router provided by Comcast, examining its security features, performance capabilities, usability factors, and overall value. The assessment follows industry standards including CableLabs Gateway Security Best Current Practices, IMDA Residential Gateway specifications, and NIST recommendations.

The ARRIS G54 scores well in most security criteria, excels in performance with its Wi-Fi 7 capabilities, offers user-friendly setup and management, and provides good long-term value through ownership instead of rental. Notable security concerns include HTTP (not HTTPS) for local management and UPnP enabled by default.

Evaluation Methodology

Our evaluation uses a weighted scoring system across four main categories:

Each criterion is scored on a 0-10 scale, with specific references to industry standards and documentation.

Security Evaluation (50%)

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| **Criterion** | **Score (0-10)** | **Reference/Notes** |
| Default Credentials (CableLabs REQ OOB-006, IMDA 4.1.1) | 10 | Forces users to set a new admin password on first use with complexity requirements |
| Optional Services Disabled (CableLabs REQ OOB-005, IMDA 4.2.1) | 5 | Most non-essential services off by default, but UPnP enabled out-of-box |
| Firewall & NAT Default (IMDA 4.3.15.1 / 4.2.d) | 10 | NAT router with stateful firewall enabled by default |
| Factory Reset (CableLabs REQ OOB-009) | 10 | Physical reset button to erase settings and restore factory defaults |
| Remote Admin Access (CableLabs REQ OOB-008) | 10 | Remote web administration disabled by default |
| Password Strength Policy (CableLabs REQ OOB-012, IMDA 4.1.2) | 10 | Enforces strong admin password (8+ chars with complexity) |
| Encryption of Sensitive Data at Rest (CableLabs REQ DRP-001) | N/A | No public information on data-at-rest encryption |
| TLS/Encrypted Services (CableLabs REQ DE-002) | 5 | External communications use secure protocols, but local admin via HTTP |
| Secure Hash Algorithm (CableLabs REQ DE-006) | N/A | Storage hash method not published |
| Cipher Suite Control (CableLabs REQ DE-007) | N/A | No user control over TLS cipher suites |
| Unused Ports/Interfaces (CableLabs REQ MI-003) | 10 | No extraneous interfaces listening by default |
| Multi-Factor Authentication (CableLabs REQ MI-004) | 0 | No MFA support for admin interface |
| Admin Session Reauthentication (CableLabs REQ MI-009/010) | 5 | Timeout exists but not documented or configurable |
| Input Validation & Secure Coding (CableLabs REQ MI-012) | N/A | Not verifiable without source code or penetration testing |
| Vulnerability Disclosure/Updates (CableLabs REQ SBOM-010) | 8 | Updates delivered automatically by ISP, no known CVEs |
| Web GUI via HTTPS (CableLabs REQ NETS-001) | 0 | Management page accessed over plain HTTP with no HTTPS option |
| No Telnet/FTP Services (CableLabs REQ NETS-005) | 10 | No Telnet or FTP access available to end-users |
| Allow Only Necessary Services (CableLabs REQ NETS-007) | 10 | Default deny for inbound; no extraneous open ports |
| Wi-Fi Security Default (CableLabs REQ NETA-002, IMDA 4.5.2.4.1) | 10 | WPA2/WPA3 Mixed Personal (AES) encryption by default |
| Login Attempt Limit (Broadband Forum TR-124/SEC.USERINTERFACE.6) | 0 | No indication of account lockout after failed attempts |
| Legacy WPA Warning (IMDA 4.4.b) | N/A | Not explicitly documented |
| Automatic Firmware Updates (IMDA 4.3.a, 4.3.g) | 10 | Automatic security updates via ISP network |

Performance Evaluation (25%)

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| **Criterion** | **Score (0-10)** | **Reference/Notes** |
| Wi-Fi Speed (Throughput) | 10 | Wi-Fi 7 BE18000 with up to 18 Gbps theoretical throughput; 10G+4x1G Ethernet |
| Signal Strength & Range | 9 | 8 antennas with beamforming; quad-band coverage up to claimed 5,000 sq ft |
| Latency & Jitter | 9 | DOCSIS 3.1 technology reduces latency; supports WMM for traffic prioritization |
| Multi-Device Handling | 10 | Wi-Fi 7 OFDMA & MU-MIMO; quad-band design segregates device types effectively |

Usability Evaluation (17%)

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| **Criterion** | **Score (0-10)** | **Reference/Notes** |
| Setup & Installation (IMDA GEN.OPS.10) | 9 | Quick activation via SURFboard Central app; approximately 10-15 minutes |
| Device Lifespan & Support (IMDA GEN.OPS.4) | 8 | Flagship model with latest standards; expected 3-5+ years of updates |
| Additional Drivers/Software (IMDA GEN.OPS.11) | 10 | No drivers required; optional mobile app for enhanced management |
| Documentation & Support Availability (IMDA GEN.OPS.19) | 9 | Comprehensive documentation from both Arris and Comcast |

Cost & Value Evaluation (8%)

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| **Criterion** | **Score (0-10)** | **Reference/Notes** |
| Upfront Cost vs Rental | 10 | One-time cost ~$350-400; compared to ~$14/month rental ($168/year) |
| Purchase/Ownership Option | 10 | Full ownership with no restrictions; approved for Xfinity, Cox, Spectrum, etc. |
| Hidden or Additional Fees | 10 | No activation fees, subscriptions, or hidden costs |
| Overall Value | 9 | High initial cost offset by long-term savings and superior performance |

**Insights and Observations**

* The router being one of the First Wi-Fi 7 Gateways Available for Consumers - *Most consumers still don't even have Wi-Fi 6 devices, but this router is Wi-Fi 7 ready, making it truly future-proof.*
* ISPs Still Ship Routers with Poor Defaults Like UPnP ON - *Despite years of security risks, UPnP is still enabled by default in the G54. This represents a security risk.*
* Cost Recovery in Less Than 2 Years - *Purchasing a G54 for approximately $350 eliminates Comcast's $14/month rental fee This represents a break-even point at approximately 25 months, after which the device continues to provide cost savings.*

User-Reported Performance Issues

* [***Upload Speeds***](https://www.reddit.com/r/Comcast_Xfinity/comments/197f469/arris_g54_upload_speed_capped_at_40mbps_vs_200mbps/?utm_source=share&utm_medium=web3x&utm_name=web3xcss&utm_term=1&utm_content=share_button)*:* Multiple users have reported that even after upgrading the ARRIS G54, their upload speeds remain capped at around 40 Mbps, even when their plans support higher speeds. This suggests potential provisioning issues or compatibility limitations with certain ISP networks.
* [***Latency Issues****:*](https://www.reddit.com/r/Comcast_Xfinity/comments/1h19v93/arris_g54_latency_issues/?utm_source=share&utm_medium=web3x&utm_name=web3xcss&utm_term=1&utm_content=share_button)Some users have experienced high latency, with webpages and applications taking unusually long to load. This has been observed even when devices are near the router, indicating possible firmware or hardware issues.
* **Inconsistent Speeds**: There have been reports of inconsistent download speeds, where some users said they achieved over 1 Gbps while others struggle to reach 500 Mbps. Factors such as device compatibility, network congestion, and router settings contribute to these discrepancies. ​

Sources & References

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