Merit LILIN Technical Support Document

Subject: New security improvements for LILIN IP cameras and NVRs

1. CGI is protected to prevent inserting user authentication details including DDNS, SNMP, SIP, Samba service.
2. Hardcoded username and password of web page has been removed and encrypted.

In order to add extra security protection, the following protocols and mechanisms have been added to the recent firmware releases.

HTTPs
- HTTPs (TLS) added for both NVR and IP camera
- NVR provides HTTPs for remote browsers.
- DDNSIPCam.com supports HTTPs.
- DDNSIPCam.com connects via HTTPs for NVRs and IP cameras

Digest Authentication
- Digest authentications are supported via HTTP and RTSP for both NVR and IP camera.
- IP filters, black and white lists to prevent unauthorized access
- Password strength enforcement
- Guest and operator default access rights have been removed.

Password Protection
- Force to change default password at web interface with disclaimer prompt.
- Database regarding credentials inside firmware are encrypted.
- Username and password in firmware are represented as non-array (string) based for preventing reverse engineering for NVR and IP camera.
- Remove https://www.shodan.io/ scanning.
- 802.1x on Ultra, S, and M camera series

Sensitive Data Encryption
- Import and export configuration files are encrypted for NAV, NVR, and IP camera.
- Sensitive database such as username and password of DDNSIPCam.com are encrypted.

LILIN will continuously improve security issues of LILIN IP cameras and NVRs if there is any and will soon add the followings:

- Brute force attacks for account lock out for certain time
- Support HTTPs for LILINViewer App

Other Security Concerns
DDoS (A Distributed Denial of Service) & Botnet
NVRs or cameras could become DDoS & Botnet devices for attacking other Internet services.   The root cause might be the camera developers use Internet open source for, RTSP, HTTP server and Telnet for cameras.   LILIN wrote our own RTSP service, HTTP services, and do not have default password for Telnet service.

LILIN NAV System Improvement for WannaCry 2.0
● Disable TCP 455 Port

Protocols
SNMP
SNMP client is disabled by default.

UPnP
UPnP server is disabled by default.

Bonjour
Bonjour client is disabled by default.

FTP
FTP server is disabled by default.

HTTP
Some NVR and camera vendors have master password built-in in their devices.
LILIN NVR and camera do not have default passwords built-in.

More Secure Way
LILIN P2P protocol is proprietary. LILIN P2P protocol is now available for LILIN NVR platform. LILIN P2P NVRs can be accessed by LILIN Navigator and LILINViewer.

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