

# Router Analytics – Installation through GUI/APP

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# Change Log

| Revision | Date       | Changes  |
|----------|------------|--|
| V1.      | 2018/04/12 | <ul style="list-style-type: none"><li>Initial version</li></ul>  |
| V2.      | 2018/04/16 | <ul style="list-style-type: none"><li>Add Foxconn design spec part</li></ul>   |
| V3       | 2018/04/26 | <ul style="list-style-type: none"><li>Add unknown option for “installByGuiApp” in stage 2</li></ul>  |
| V4       | 2018/06/20 | <ul style="list-style-type: none"><li>Add bug fix for stage 1</li></ul>  |
| V5       | 2018/07/03 | <ul style="list-style-type: none"><li>Refine manageByGuiApp behavior (p5 &amp; p11~ p12)</li></ul>   |
| V6       | 2018/07/04 | <ul style="list-style-type: none"><li>Separate manageByGuiApp into two attributes</li></ul>  |
| V7       | 2018/07/06 | <ul style="list-style-type: none"><li>Add Foxconn design spec for manageByGui, manageByApp and installFwUpgradeLatest(p5, p10 and p17)</li></ul> |
| V8       | 2018/07/16 | <ul style="list-style-type: none"><li>Modify check mechanism for manageByApp(p5)</li></ul>   |
| V9       | 2018/07/19 | <ul style="list-style-type: none"><li>Update in detail about the cases in installByGuiApp (p.7)</li></ul>  |
| V10      | 2018/07/23 | <ul style="list-style-type: none"><li>Update in detail about the cases in installByGuiApp(p5 and p.7)</li></ul>                                  |

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| Revision | Date       | Changes  |
|----------|------------|--|
| V11.     | 2018/08/10 | <ul style="list-style-type: none"><li>• Update in detail about the cases in installByGuiApp(p6)</li></ul>  |
| V12      | 2018/10/19 | <ul style="list-style-type: none"><li>• Update in detail about the cases in installFwUpgradeLatest (p6)</li><li>• Update in detail about the cases in manageByGui/manageByApp (p7 and p12)</li></ul> |
| V13      | 2018/10/23 | <ul style="list-style-type: none"><li>• Update in detail about the cases in manageByGui/manageByApp (p7)</li></ul>   |

# Attributes Definition

| Attributes               | Value  | Data Type | Range of Value   |
|--------------------------|--------|-----------|--|
| "routerInfo": {          |        |           |  |
| ⋮                        |        |           |  |
| "raeLibrary": {          |        |           |  |
| "raeAgentVersion":       |        |           |  |
| "raePolicyVersion":      |        |           |  |
| },                       |        |           |  |
| "installByGuiApp"        | "GUI", | String    | <ul style="list-style-type: none"><li>stage1: GUI or APP</li><li>stage2: unknown, GUI, and APP</li></ul> |
| "installFwUpgradeLatest" | true,  | Boolean   | true of false  |
| "manageByGui"            | true,  | Boolean   | true of false  |
| "manageByApp"            | false, | Boolean   | true of false  |
| ⋮                        |        |           |  |

# Implementation Details – Through RAE Update

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- installByGuiApp
  - Through NVRAM: call\_by\_genie
    - Installation through GUI not complete: call\_by\_genie=1
    - Installation through GUI completed: call\_by\_genie=0
    - Both above cases will set attribute to "GUI"
  - If there's no such NVRAM, call\_by\_genie
    - Set attribute to "APP"

# Implementation Details – Through both firmware and RAE - 1

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- installByGuiApp - to know router installed by GUI or APP
  - GUI: genie\_to\_success.cgi
  - APP: **SetEnable SOAP API**
- installFwUpgradLatest - to know if user choose to skip upgrade to the latest firmware during installation
  - GUI upgrade CGI: ver\_result.cgi
  - APP upgrade API: UpdateNewFirmware SOAP API
  - Limitation: Router can not know that user click "cancel" button to skip upgrade
- There are three scenarios for installFwUpgradLatest
  1. New firmware on server and user choose to upgrade, meaning value of installFwUpgradLatest is true
  2. New firmware on server but user choose to skip upgrade , meaning value of installFwUpgradLatest is false
  3. No new firmware on server, meaning value of installFwUpgradLatest is true
- **If router is not support this feature ("RA\_installFwUpgradeLatest" nvram is empty), don't need to report this attribute to server**

# Implementation Details – Through both firmware and RAE - 2

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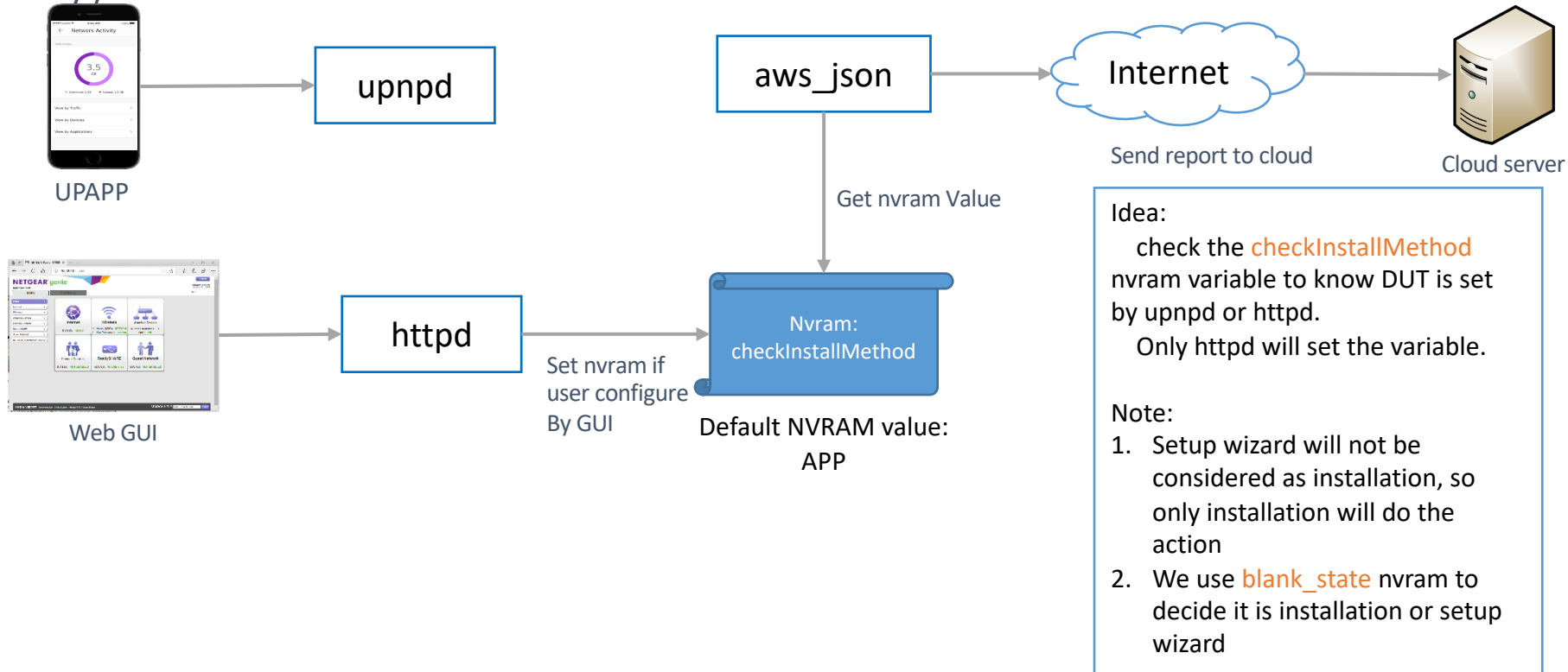
- manageByGui/manageByApp - to know user manage router by GUI or APP
  - Local access
    - GUI: HTTP basic access authentication(Listen on port 80)
    - APP: Received any SOAP API
  - Remote access by GUI (httpd) /APP (xagent in RemoteGenie, use Genie APP to simulate UP app behavior)
    - GUI: HTTPS basic access authentication(Listen on port 8443)
    - APP: Received any SOAP API
- Note
  1. If router support this feature, The files will be set 0 when router booting process
  2. If router is not support this feature meaning the files are not exist, don't need to report data
  3. Router will set 1 in file when user access router via GUI or APP, and router will set 0 in file after reporting RA log
  4. Files stored in memory and the location are as follows
    - manageByGui : /tmp/manage\_by\_gui
    - manageByApp : /tmp/manage\_by\_app

# ODM Engineering Design Spec (Template)

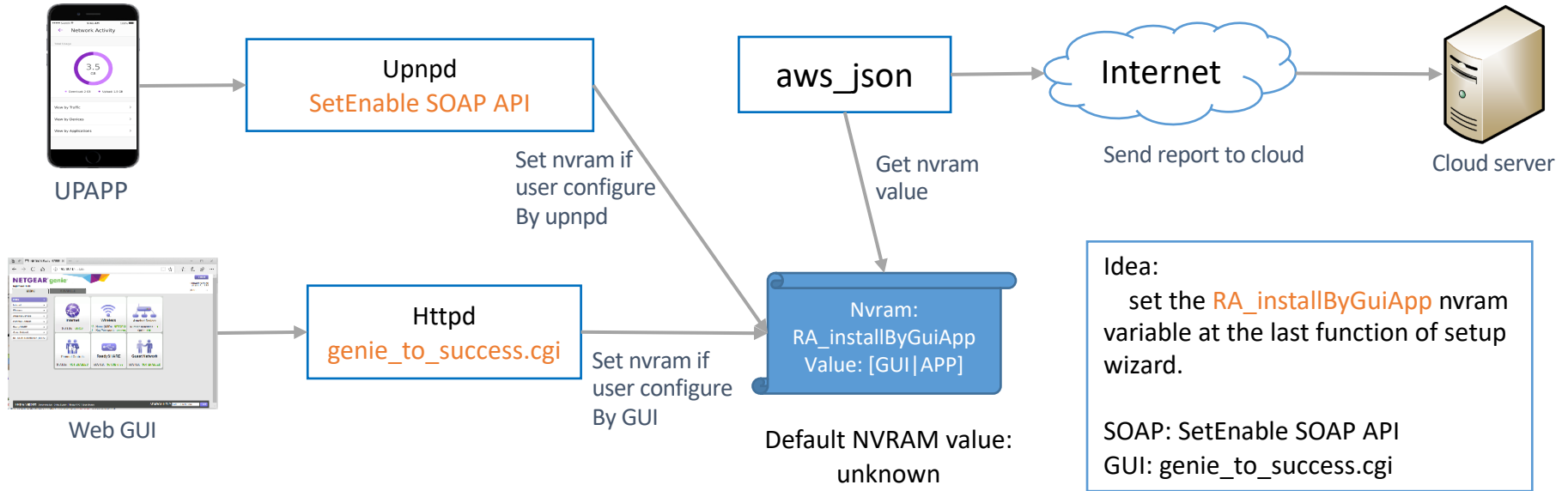
- High Level System architecture Diagram
  - Describe the API, process daemon, thread, kernel thread, kernel patch, kernel config change, periodical process related to this SW feature
- Function flow diagram
  - Important function flow diagram
- Resource constraint
  - DDR requirement: Normal and Maximum
  - Flash requirement: Normal and Maximum
  - Increased on firmware size.
- Function limitations
  - Any limitation to this design
- Performance
  - Any performance impact to router.
  - CPU profiling
- Development Plan
  - Resource plan: In house development, 3<sup>rd</sup> party vendor, ODM
  - Schedule estimate



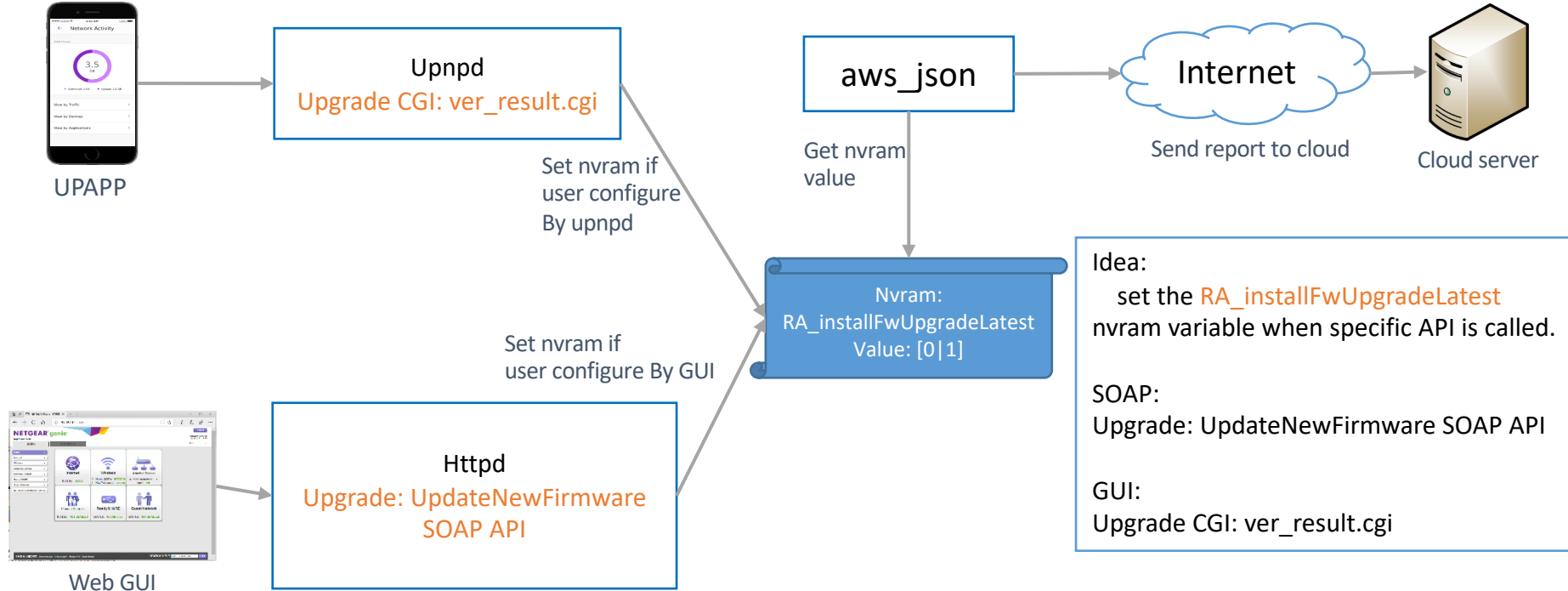
# High Level System architecture Diagram – checkInstallMethod (RAE only)



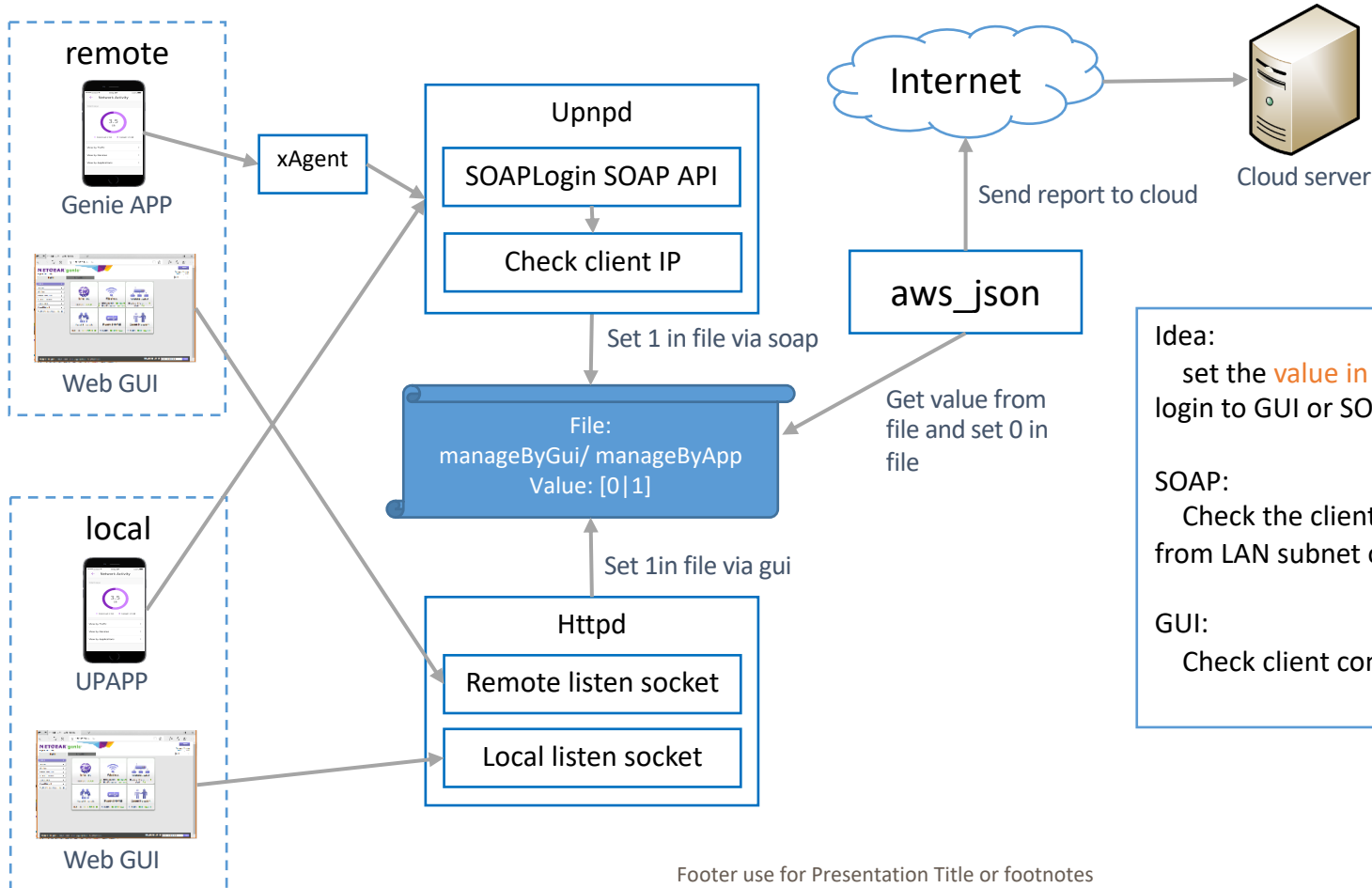
# High Level System architecture Diagram – checkInstallMethod



# High Level System architecture Diagram – checkUpgradeLatest



# High Level System architecture Diagram – checkManagementMethod



Idea:

set the **value in file** when remote or local client login to GUI or SOAP.

SOAP:

Check the client IP address to know client is from LAN subnet or xAgent (remote)

GUI:

Check client connects to local or remote socket

# Resource constraint

- DDR requirement:

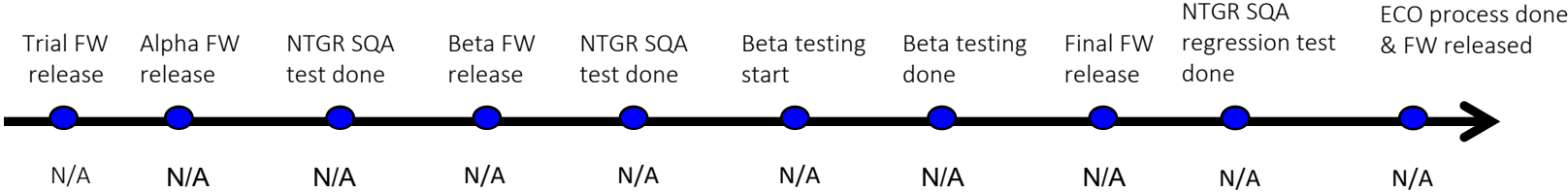
| Normal | Maximum |
|--------|---------|
| <100K  | <100K   |

- Only do nvram get and set, should not use too much memory.

- Flash requirement:

| Firmware Size | Data partition | Individual partition |
|---------------|----------------|----------------------|
| <100k         | n/a            | n/a                  |

# Development Plan



| Action Items   | Status Update | DRI      |
|--|---------------|----------|
| Only RAE update with the 1st attribute implemented             | 1. On-gong    | Joe 4/17 |
| Both RAE and firmware updated with all attributes implemented. | 1. On-going   | Joe 4/20 |
|  |               |          |
|  |               |          |

# Release plan

# RAE 1.1.0.12 (for RAE 1.1.0.10 bug fix)

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- Through RAE only
- The target is only focus on the first attribute, installByGuiApp; as for other two, leave it to next RAE/firmware release.
- installByGuiApp
  - Rollback to stage1 behavior, including not reporting installFwUpgradeLatest & manageByGuiApp data.



# RAE 1.1.0.13 (Full support of this project)

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- Through RAE and firmware
- installByGuiApp [GUI | APP]
  - Bug in the first RAE version V1.1.0.10
    - NVRAM: RA\_installByGuiApp, is not set by either cgi or API after user [upgrades](#) to stage 2 supported firmware (e.g. v1.0.9.32), then the value will remain "[unknown](#)"
  - The revision is to fix the unknown situation
    - Once firmware found the value is "unknown", then [switch back to stage 1 implementation](#) to check the "call\_by\_genie" NVRAM to decide it's GUI or APP to fill in with.
    - There'll be [0 unknown cases](#) after user updates this RAE.
  - [As users won't continuously install router, installByGuiApp and installUpgradeLatest will be reset to default only when router reset to default.](#)
- manageByGui [ true | false ]
  - [Once value reported to S3, change the value to default "false".](#)
- manageByApp [true|false]
  - [Behavior same as above.](#)
- Other existing bug fixes.