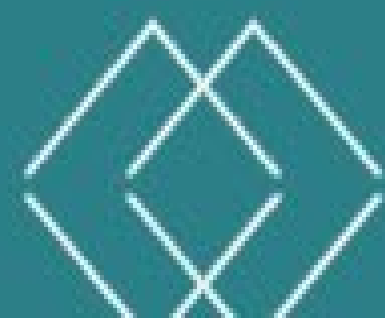


TIP



**PLUGFEST** '20

TIP Community Lab



TELECOM INFRA PROJECT

# Carrier Wi-Fi - Mobile Data Offload PlugFest

TIP PlugFest July 2020

# Agenda

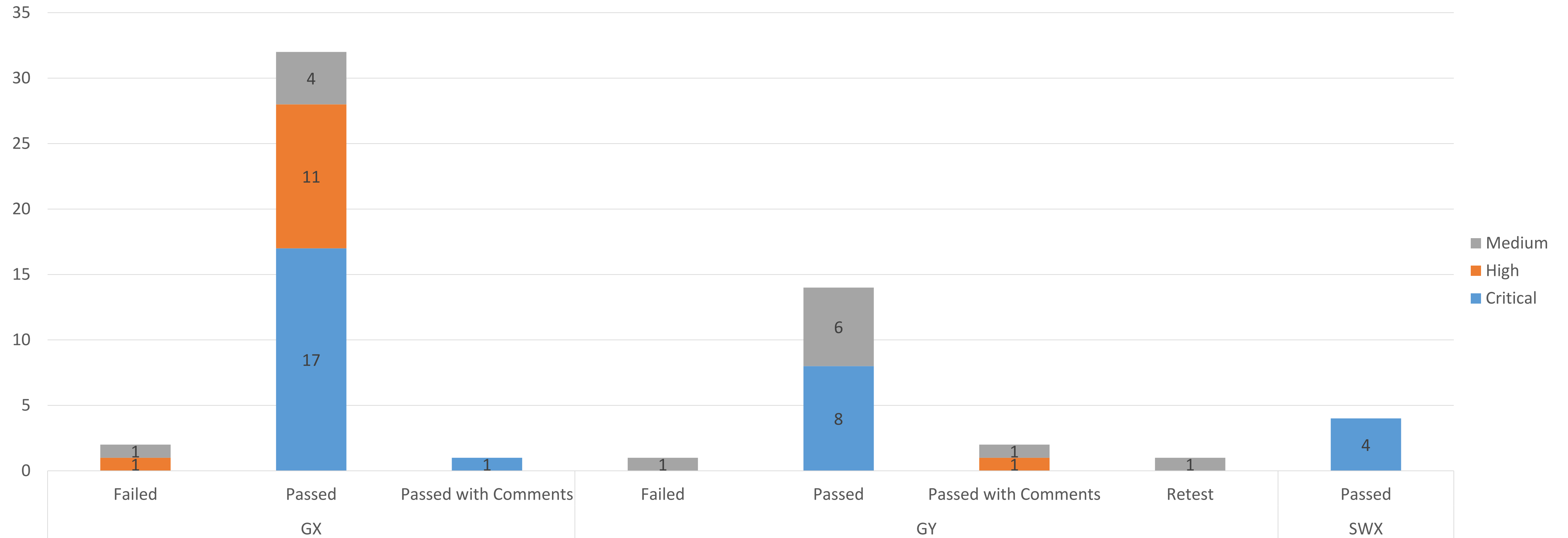
- 1 Summary
- 2 Architecture and Test Setup
- 3 Test Plan and Results
- 4 Next Steps

# Overall Summary

- PlugFest Scope:
  - Interoperability between Carrier Wi-Fi core and Carrier LTE network (EPS)
  - Current PF focused on Gy, Gx and SWx for interworking with Core nodes (OCS, HSS, PCRF)
- All P1 test cases passed, demonstrating good interworking between Carrier Wi-Fi and core elements (OCS, HSS, PCRF)
- All 57 test cases (P1,P2 & P3) executed
  - 6 issues were identified, 2 issues were resolved, and 4 issues are open at the conclusion of testing

## Summary

# Test Execution Summary



Pass: feature is working as per 3GPP specifications TS29.273 (SWx), TS 29.212 (Gx) and TS 32.299 (Gy), following test procedure

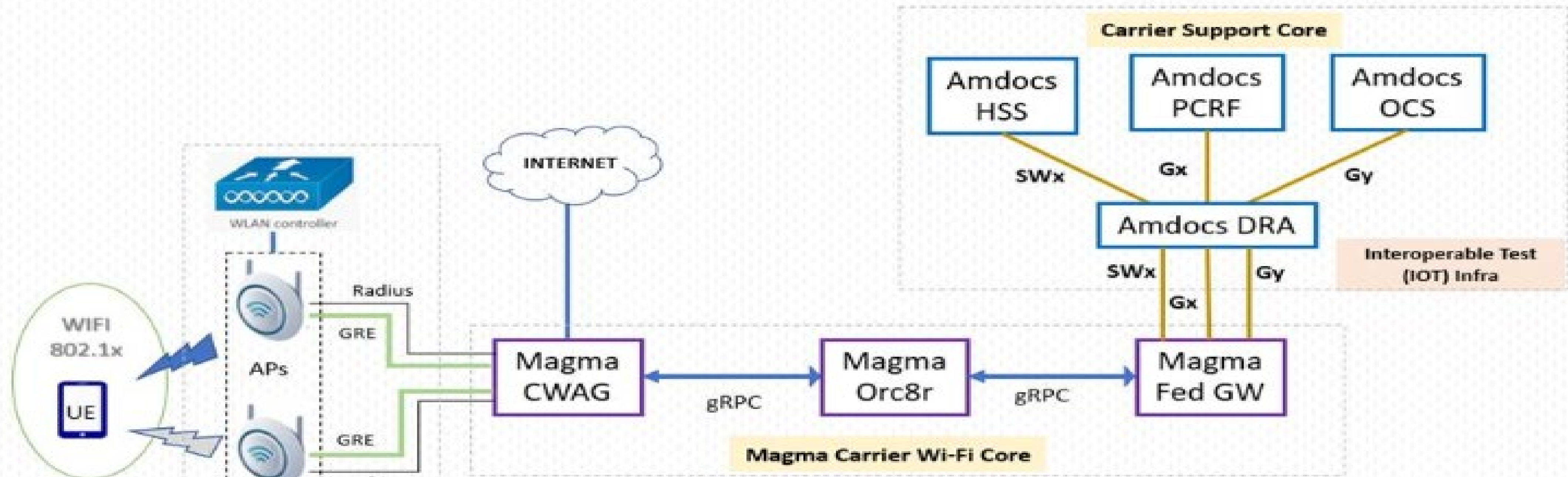
Failed: Feature is failing as per test steps during execution.

Pass with comments : functionality worked but some inconsistency observed

# Architecture and Test Setup

## Overall Architecture

### Magma Carrier WiFi – Amdocs IOT Architecture



#### Abbreviation

- CWAG : Carrier Wi-Fi Access Gateway
- Orc8r : Orchestrator
- Fed GW : Federation Gateway
- DRA: Diameter Routing Agent
- HSS : Home Subscriber Server
- PCRF : Policy and Charging Rules Function
- OCS : Online Charging System
- AP : Wi-Fi Access Point
- GRE : Generic Routing Encapsulation
- UE : User Equipment

# Test Plan and Results

## Features and Use Cases

- Following was the Main focus of the current PlugFest implementation

### **SWx ( Magma Fed-GW/CWAG <-> HSS)**

- EAP-AKA Authentication.
- Non-3gpp Service Access

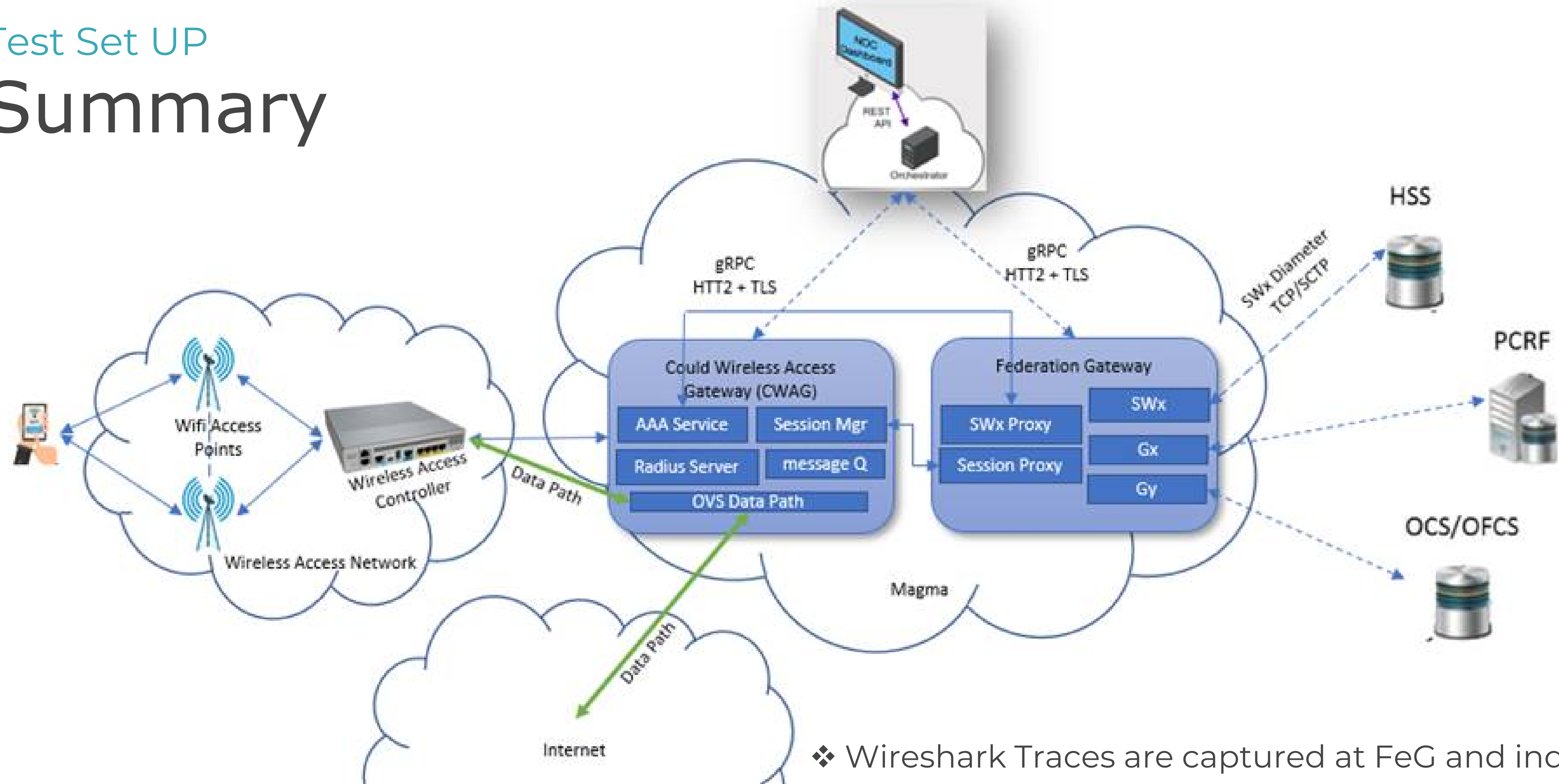
### **Gx ( Magma Fed-GW/CWAG <-> PCRF)**

- Static Rule and Rulebase enforcement.
- Dynamic Rule enforcement.
- Gx Usage Reporting.
- Multi rule precedence.
- UE Mid-session policy updates with RAR.
- Time of the delay.
- Gx Revalidation Timeout.

### **Gy ( Magma Fed-GW/CWAG <-> OCS)**

- Volume based Gy usage reporting.
- Time based Gy usage reporting.
- Authorization only flow.
- “RAR” on charging status change
- FUA – Terminate and Redirect

# Test Set UP Summary

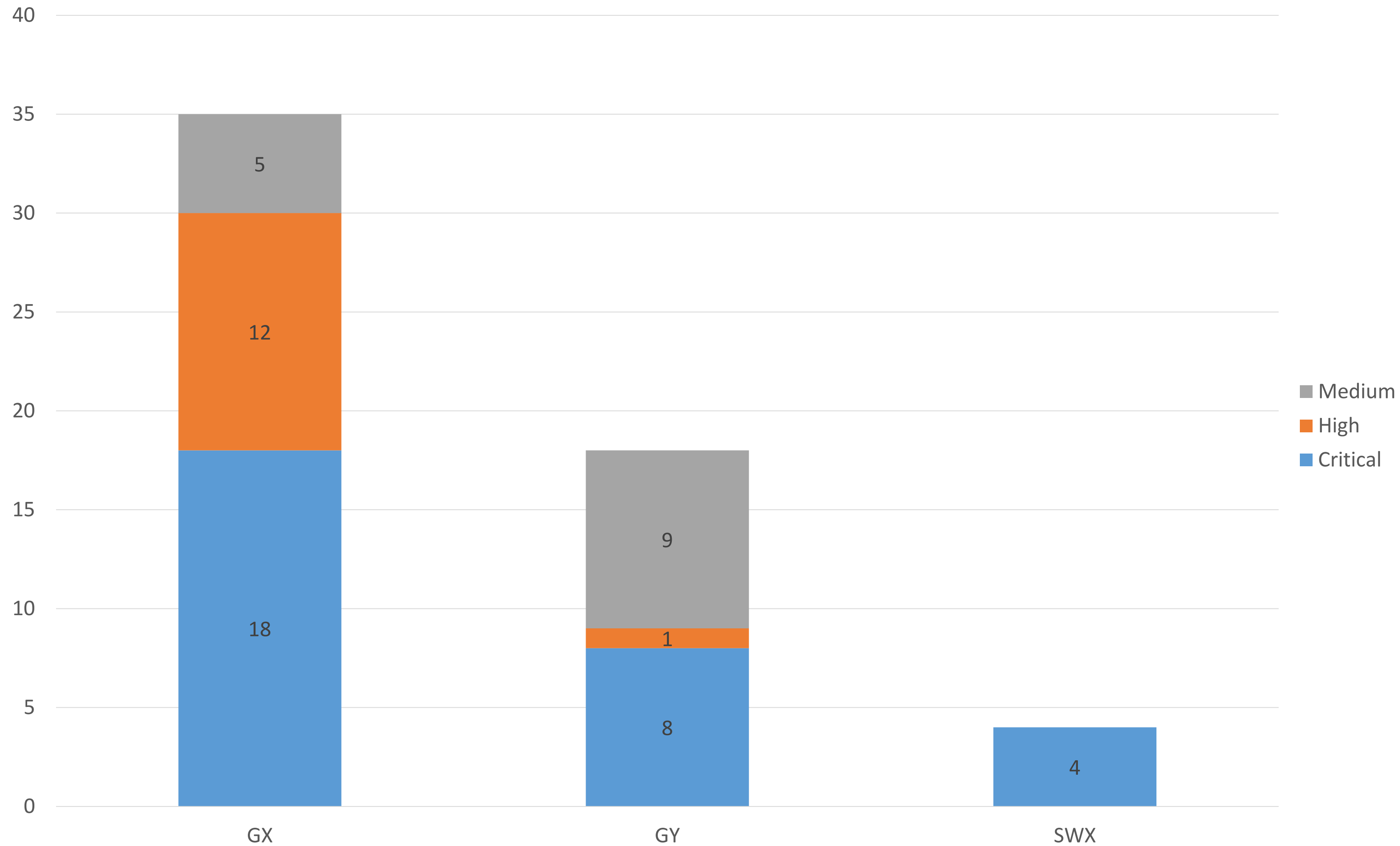


- ❖ Wireshark Traces are captured at FeG and individual Core component interfaces, analyzed and uploaded to Test Rail as evidence
- ❖ UEs are remotely controlled using the Vysor software



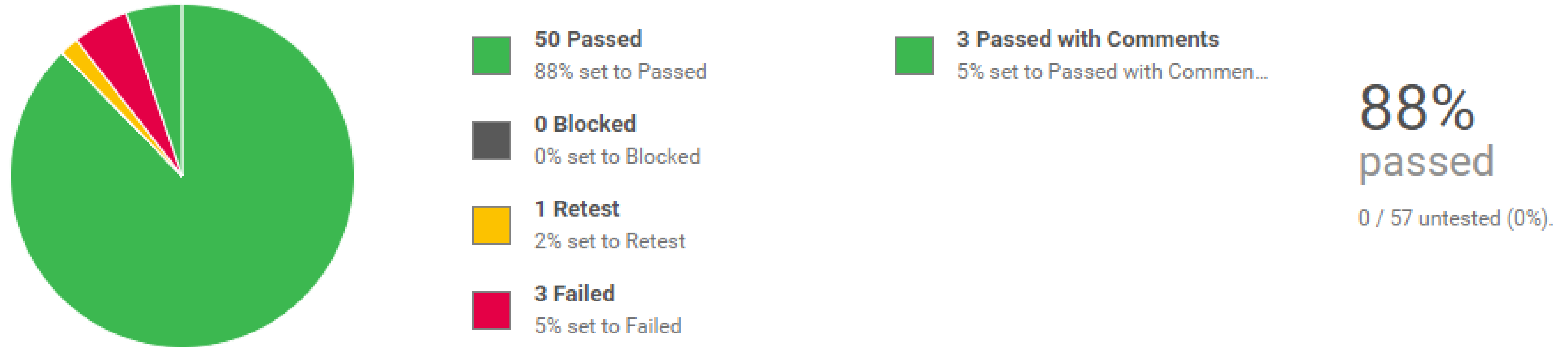
## Test Plan and Results

# Test Cases by Priority and Interfaces



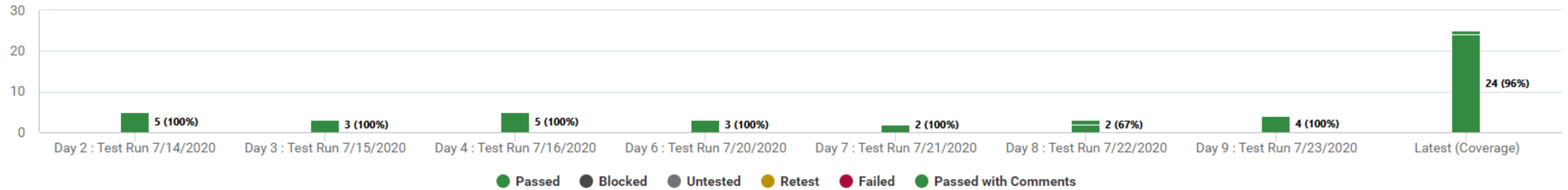
- Additional 14 test cases are defined (Low Priority) but were not attempted due to not supported in the current CWF release

# Summary Test Results



- Overall 93% of test cases passed or passed with comments
- Test labeled as “retest” failed during retest, for an overall failed rate of 7%

# P1 Test Execution Summary



- For P1 test cases, 100% of test cases passed
  - Single test cases passed with comments due error generated during the test case, even if the behavior was as expected
    - GX-12: POLICY TO ALLOW ZERO RATE AND GATING RULE

# P1 Test Cases, Per Interface

SWx					Gx				
<input type="checkbox"/> ID	Priority	Test ID	Title		<input type="checkbox"/> ID	Priority	Test ID	Title	
<input type="checkbox"/> C1973	Critical	SWX-1	Diameter-Peer Connectivity		<input type="checkbox"/> C1982	Critical	GX-1	CONNECTION ESTABLISHMENT AND CAPABILITIES EXCHANGE	
<input type="checkbox"/> C1974	Critical	SWX-2	Valid Subscriber - Non-3gpp IP Access Authenticate for EAP-RADIUS		<input type="checkbox"/> C1983	Critical	GX-2	DIAMETER WATCHDOG	
<input type="checkbox"/> C1975	Critical	SWX-3	Valid Subscriber - Non-3gpp IP Access SWx Message Exchanges		<input type="checkbox"/> C1984	Critical	GX-3	SESSION INITIALIZATION (EXCHANGE OF CCR-I/CCA-I)	
<input type="checkbox"/> C1977	Critical	SWX-5	Invalid Subscriber - Non-3gpp IP Access Authenticate for Barred SIM		<input type="checkbox"/> C1985	Critical	GX-4	PCEF-INITIATED SESSION UPDATE (EXCHANGE OF CCR-U/CCA-U)	
					<input type="checkbox"/> C1987	Critical	GX-6	RAR/RAA MESSAGE EXCHANGE	
					<input type="checkbox"/> C1989	Critical	GX-8	BASIC DATA CALL (CCR-I/CCR-U/CCR-T)	
					<input type="checkbox"/> C1993	Critical	GX-12	POLICY TO ALLOW ZERO RATE AND GATING RULE	
					<input type="checkbox"/> C1995	Critical	GX-14	TESTING WITH LIVE FUP WIFI PLAN (ACCUMULATION & ON THE FLY QOS CHANGE)	
					<input type="checkbox"/> C1998	Critical	GX-17	INSTALLING PCC-RULE-NAME	
					<input type="checkbox"/> C1999	Critical	GX-18	INSTALLING MULTIPLE PCC-RULE-BASE-NAME	
					<input type="checkbox"/> C2000	Critical	GX-19	REMOVING PCC-RULE-NAME	
					<input type="checkbox"/> C2001	Critical	GX-20	REMOVING MULTIPLE PCC-RULE-NAME	
					<input type="checkbox"/> C2003	Critical	GX-22	TRIGGER GY FOR PAYGO (PREPAID AND POSTPAID)	
					<input type="checkbox"/> C2008	Critical	GX-27	ZERO RATING RULES	
					<input type="checkbox"/> C2015	Critical	GX-34	TEST IDLE USER AT CWAG	
					<input type="checkbox"/> C2016	Critical	GX-35	CCR-U INDICATES QUOTA EXHAUSTION	
					<input type="checkbox"/> C2017	Critical	GX-36	CCR-I WITH FRAMED IPV6 PREFIX	
					<input type="checkbox"/> C2019	Critical	GX-38	ATTACHING NEW PLAN WITH LOWER PRIORITY DURING SESSION	

Gy				
<input type="checkbox"/> ID	Priority	Test ID	Title	
<input type="checkbox"/> C2025	Critical	GY-01	CONNECTION ESTABLISHMENT AND CAPABILITIES EXCHANGE	
<input type="checkbox"/> C2026	Critical	GY-02	Device-Watchdog	
<input type="checkbox"/> C2027	Critical	GY-03	Session Establishment (centralized unit determination)	
<input type="checkbox"/> C2028	Critical	GY-04	Session Update (centralized unit determination)	
<input type="checkbox"/> C2029	Critical	GY-05	Session Termination (centralized unit determination)	
<input type="checkbox"/> C2030	Critical	GY-06	Verify OCS allocates validity time	
<input type="checkbox"/> C2035	Critical	GY-11	Terminate request is generated after the expiry of Session IDLE_Timeout.	
<input type="checkbox"/> C2038	Critical	GY-14	Session with no Multiple Services Credit-Control (MSCC)	

## Test Plan and Results

# Test Plan

- Test Plan initially developed by Facebook, as part of the Magma project based on Wi-Fi Project group needs
- Test plan updated during the testing based on all participants feedback
- Test plan to be posted to the PF (and Wi-Fi) PG workplace for further comments





## Next Steps

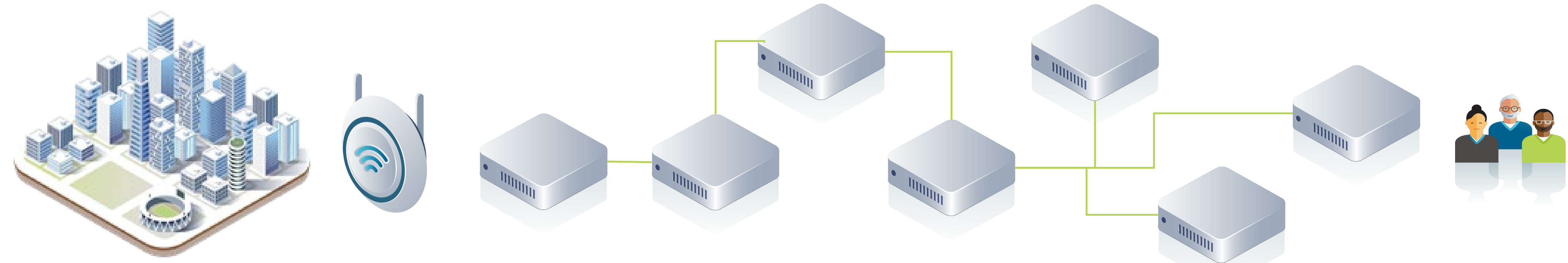
# Next Steps

- Update test report and share with Wi-Fi Project Group
- Develop external/sanitized version of the report, i.e. without details of the failures
- Post test plan in PF and Wi-Fi PGs for comments
- Update exchange with the tested configuration
  - PlugFest badge for DuT (CWAG and FeG)
  - PlugFest badge for SI
  - Lat badge for supporting equipment (Core nodes)
- Release externally the Test Plan and Test report



## Next Steps

# OpenWiFi configuration and Exchange Update



Node Configuration	OpenWiFi AP	OpenWiFi Controller	CWAG	Or8r	FGW	HSS	PCRF	OCS/OFC	SI
Initial validation	NA	NA	Shoelace	NA	Shoelace	Amdocs	Amdocs	Amdocs	Tech M



# Thank You

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