RELEASE DESCRIPTION

Alcatel-Lucent 5620

SERVICE AWARE MANAGER | RELEASE 8.0 R7-R8 / 9.0 R1

LTE LE3.0 RELEASE DESCRIPTION

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1 Introduction

1.1 Purpose

The purpose of this document is to communicate 5620 SAM feature content for management of LTE network elements to internal NSM groups, as well as groups external to the NSM product organization.

The audience for the document is Alcatel-Lucent clients, LTE functional groups, and engineers specialized in OAM.

The high-level feature descriptions provided by this document are intended to provide information to consumers about the content that is planned for a particular release. Each feature description includes the feature title, reference number, and the following information:

> feature description

> feature benefits

> dependencies (hardware, software, feature, inter-working, devices, and standards)

> impacted systems

> restrictions and limitations

> engineering impacts

> operational requirements (counters, configuration management, parameters, fault management, and alarms)

1.2 Related Documents

The following documents can be used as referenced:

Ref	Document	Description
[R1]	07FS0101	R5.0 – 5620 SAM Template FS
[R2]	3HE 06473 AAAA TQZZA	5620 SAM Release 9.0 R1 Release Description

1.3 New Features

The following table lists additional features or DCR functionality added.

Rel	Load	Feature Number	Description	Status	Node Number	Node Rel
8.0	R7	FN2329	5620 SAM eNodeB Security Extension	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3

Rel	Load	Feature Number	Description	Status	Node Number	Node Rel
8.0	R7	FN2330	5620 SAM eNodeB Element Management	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2331	5620 SAM eNodeB State Management	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2332	5620 SAM eNodeB Performance Management	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2333	5620 SAM eNodeB Configuration Management	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2335	5620 SAM eNodeB Self Configuration	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2337	5620 SAM eNodeB Call Trace Support	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2341	5620 SAM 3GPP Compliance for SAM-O	Optional	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2454	5620 SAM Supervision	Optional	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2346	5620 SAM supported devices and RAN Releases (eNodeB models)	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2336	eNodeB Licensing	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2338	5620 SAM eNodeB Physical Cell ID	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2339	5620 SAM eNodeB Auto Neighbour Relation	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2344	Timezone Management	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2345	5620 SAM migration from XMS LA2.0 (for mgt of eNodeB LA2.0)	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	FN2829	5620 SAM Dimensioning and KPI for LE3.0	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2834	Support of eNodeB TLA3.0	Basic	9412 eNB 9926 eNB	TLA2/TLA3
8.0	R7	FN2453	Support of eNodeB PM catch-up	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2610	3GPP compliance for SAM-O step 2 (CNBI R3.0.1)	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R8		NEM cross-launch from SAM in a different sub-network		9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2861	SAM support of eNodeB upgrade from TLA2.1 to TLA3.0	Basic	9926 eNB	TLA2/TLA3
8.0	R7	103952	WPS support of LA3.0	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
8.0	R7	96451	WPS Bulk ENodeB creation operation	Optional	9412 eNB	LA2/LA3

Rel	Load	Feature Number	Description	Status	Node Number	Node Rel
					9926 eNB	TLA2/TLA3
8.0	R7	119933	LA3.0 WPS IP v4 to Ipv6 Bulk migration	Optional	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2340	5620 SAM-CDMA Horizontal Integration (enabler in SAM in 9.0 R1, full solution in 9.0 R3)	Basic	9412 eNB 9926 eNB	LA2/LA3 TLA2/TLA3
9.0	R1	FN2219	MG Security Extensions	Basic	7750 MG	LE 3.0
9.0	R1	FN2340	Bearer List Query Filtering	Basic	7750 MG	LE 3.0
9.0	R1	FN2457	MG Peer Stats Aggregation	Basic	7750 MG	LE 3.0
9.0	R1	FN2641	MG LI 3GPP Lawful Interception	Basic	7750 MG	LE 3.0

2 PLM Functional Requirements

2.1 Release Mapping

The release content for LE3.0 RAN management has been introduced in 5620 SAM 8.0 R7/SAM 9.0 R1.

2.2 Release Content Status

As of January 17, 2011, 5620 SAM 9.0 R1 is in DR1 stage. This implies that the 5620 SAM content for LE 3.0 is Plan Of Record.

2.3 Nodal Support

The following table lists nodal support:

Node	Release
7750 MG (SGW & PGW)	MG 3.0
9471 MME	LM 3.0
5780 DSC	DSC 3.0
eNodeB	eNodeB LA2.0, eNodeB LA3.0, eNodeB TLA3.0, eNodeB LA4.0.0

The following feature list corresponds to basic node EMS level support in 5620 SAM GUIs and 5620 SAM OSS for 7750 MG, 9471 MME, and 5780 DSC. Nodal release feature content at the EMS level is provided for the features listed in the following table. See section 1 and the remainder of this document for more details about the NMS content that is included in the releases.

Rel	Load	Feature Number	Description	Status	Node Number	Node Rel
9.0	R1	FN2838	DSC R3.0 EMS – Silo (Base SAM)	Basic	5780 DSC	LE 3.0
9.0	R1	FN2645	DSC Alarms	Basic	5780 DSC	LE 3.0
9.0	R1	FN2228	MG R3.0 EMS – Silo (Base SAM)	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2639	3GPP R8 Dec 09 Standards	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2887	UE Initiated Bearers	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2886	Call Flow Stats for UE init, Piggyback, TAU and S1 based HO	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2885	S1-based HO with MME relocation and no SGW relocation	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2889	Idle Mode TAU with MME	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2616	Ga Peer Table & Statistics	Basic	7750 MG (SGW)	LE 3.0
9.0	R1	FN2221	MME LM 3.0 EMS – Silo incl Multi Shelf (Base SAM)	Basic	9471 MME	LM 3.0
9.0	R1	FN2439	MME LM 3.0 New Alarms & PM coutners	Basic	9471 MME	LM 3.0
9.0	R1	FN2441	IuPS and Gr Interfaces	Basic	9471 MME	LM 3.0
9.0	R1	FN2440	MPH Service Support	Basic	9471 MME	LM 3.0

3 Feature Description

3.1 5620 SAM Platform Capabilities

5620 SAM supports run-time environments based on Solaris 10 that run on various SUN Intel/AMD/Sparc architectures. Co-located deployments, distributed deployments, and geo-redundancy are supported. The SAM client can run on Windows-based PCs and Solaris-based platforms. Citrix is supported for the SAM client.

FN2329 – 5620 SAM eNodeB Security Extension

Feature Description

5620 SAM support is extended to integrate the eNodeB in the existing user security framework, including scope of command and span of control. These extensions also support the configuration of PKI v2 on the eNodeB.

The security framework enables centralized authentication and authorization of 5620 SAM users, providing a suite of advanced security features for account and password security policy enforcements. The security framework includes:

> Centralized user authentication and authorization for management of users, roles (user groups), and role based access control rules.

> Password and account security policies that perform the following tasks:

> Provide limits on the simultaneous use on multiple sessions of the same user id.

> Disable the accounts of users that have not logged in for a configurable period of time for each user, with a default setting of 30 days.

> Provide a reporting & disabling mechanism that allows the discovery of accounts that have not been used for over 90 days and 180 days.

> Log of all the key events relative to user accounts, such as login and logout.

5620 SAM supports a scope of control functionality to configure user group read, write, and modify access for the following eNodeB management functions:

- parameter class A/B/C configuration
- beta parameter configuration
- self-configuration execution
- configuration snapshot export
- call trace
- PM configuration

A user can be assigned to a scope of control that limits the zone (list of elements) that the user can access.

5620 SAM supports IPsec configuration through policy configuration in order to facilitate the application of different parameters. The user can choose either No-IPsec, Integrity protection only, or Integrity protection and encryption IPsec security options. 5620 SAM allow the configuration of the following combinations:

- OAM: IPv4, Telecom: IPv4, no VLAN
- OAM: IPv4, Telecom: IPv4, 1 VLAN each
- OAM: IPv6, Telecom: IPv6, 1 VLAN each
- OAM: IPv4, Telecom: IPv6, 1 VLAN each

Feature Benefits

This feature provides network operators with network security, availability, and integrity by controlling the type of operations that the end user can perform on the assigned network resources.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2345 – 5620 SAM migration from XMS LA2.0 (for mgt of eNodeB LA2.0)

Feature Description

This feature facilitates the transition of eNodeB management from XMS to the 5620 SAM.

This feature enables the operator to deploy the 5620 SAM, manage the eNodeB with SW release LA2.0, integrate into the network, and facilitate testing in this environment. When testing of 5620 SAM management of LA2.0 is complete, the 5620 SAM will be used to upgrade the network to LA3.0.

For this feature, a document will be produced that generally describes the process of migrating LA2.0 eNodeBs, managed by XMS LA2.0, to management by the 5620 SAM.

The migration of the eNodeB configuration management data is covered by this procedure. Upon recovery of management of an eNodeB, the 5620 SAM will completely recover all aspects of the eNodeB's operation and configuration status via its usual re-synchronization mechanisms.

The NPO & WPS platforms must be upgraded in LA3.0/TL3.0 prior to the migration of eNodeB to the 5620 SAM platform.

The 5620 SAM platform must be installed as or upgraded to release 8.0 R7 prior to the effective migration of the eNodeB by the 5620 SAM platform

The eNodeB shall be migrated while operating LA2.0 SW. Upgrading the eNodeB to LA3.0 will be performed after the migration to the 5620 SAM platform is complete.

Feature Benefits

This feature ensures the migration of critical data from the XMS LA1.1 server to the XMS LA2.0 server.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

Historical information related to alarms, events, performance management data will not be migrated from LA2.0 XMS to the 5620 SAM.

UNIX user/group definitions will not be migrated, but the procedure indicates how to retrieve the list of UNIX user/group definitions available on XMS and the operations required to recreate them on the 5620 SAM server.

GUI user/group/preference definition will not be migrated, but the procedure indicates how to retrieve the list of GUI user available on XMS and the operations required to recreate them on the 5620 SAM server.

Engineering Impacts

N/A

Operational Requirements

N/A

FN2829 – 5620 SAM Dimensioning and KPI for LE3.0

Feature Description

This feature describes the 5620 SAM Key Performance Indicators and dimensioning for LTE RAN network management.

Areas targeted for scale investment	Small	Medium	Large	X-Large
Maximum network elements	150	975	4500	12,000
Maximum number of base stations	100	650	3,000	8,000
Maximum number of cells/sectors	300*	1850*	9000*	24,000*
Maximum number of managed MDAs	300	1900	9000	25,000
Concurrent OSS Clients	30	30	30	30
Concurrent GUI Clients	15	35	60	150
Simultaneous Active Call Trace sessions	30	30	50	100

- 3 cells per eNodeB supported in LE3.0

For specific platform sizing recommendations, please refer to the 5620 SAM H/W PLATFORM sizing web tool.

Feature Benefits

This feature guarantees the performances of the overall release.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

For X-Large configuration 2 AUX servers are necessary to support 100 simultaneous Call Trace sessions.

In SAM 8.0 R7/R8/9.0 R1, a maximum of 3000 eNB is supported on the X-Large configuration.

In SAM 9.0 R1, a maximum of 5000 eNB is supported on the X-Large configuration.

A single AUX server is able to support up to 50 simultaneous Call Trace sessions in 8.0 R8/9.0 R1.

Engineering Impacts

N/A

Operational Requirements

N/A

FN2344 – 5620 SAM Timezone Management

Feature Description

The 5620 SAM supports a new user preference that allows the operator to specify the time zone to be used for all time stamps displayed in the SAM GUI.

The 5620 SAM supports a function to allow the operator to transiently switch between the operator-specified time zone and a different time zone. The new time zone is not saved as a user preference.

Feature Benefits

This feature ensures the correct handling of timezones in the 5620 SAM.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2219 – 5620 SAM MG Security Extension

Feature Description

5620 SAM support is extended to include full support for standard span and scope security for MG 2.0 release nodes. The existing SAM frameworks provide centralized authentication and authorization of 5620 SAM users, user and group accounts, password security policy enforcements, and rich management on users as follows:

> Centralized user authentication and authorization for management of users, roles (user groups), and role based access control rules

> Password and account security policies that perform the following tasks:

- Provide limits on the simultaneous use on multiple sessions with the same user id
- Disable the accounts of users that have not logged in for a configurable period of time for each user, with a default setting of 30 days

- Provide a reporting and disabling mechanism that allows the discovery of accounts that have not been used for over 90 days and 180 days
- Provide a log of all the key events relative to user accounts, such as login and logout

5620 SAM extends the scope of control functionality in 9.0 R1 to include user group read, write, delete (an extension for 3.0), and modify access for all MG 3.0 nodes. These restrictions extend the 5620 SAM current scope controls from the schema level in the following manner:

> Provision of scope control at the class level; for example, peers and peer type (S1U)

> Provision of a special LTE EPCUser to control scope

> Alignment with eNodeB extensions introduced in 8.0 R7

Feature Benefits

This feature provides network operators with improved control over scope by greatly increasing the granularity of settings, and by introducing a deletion (rather than modify/delete) in the scope controls.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9. 1	N/A	7750 MG	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

3.2 5620 LTE RAN Specific

FN2346 - 5620 SAM supported devices and RAN Releases (eNodeB models)

FN2834 - Support of eNodeB TLA3.0

FN2861 - SAM support of eNodeB upgrade from TLA2.1 to TLA3.0

Feature Description

The 5620 SAM system supports the following devices and RAN release:

eNodeB release	Technology
eNodeB LA2.0	FDD
eNodeB TLA2.1	TDD
eNodeB LA3.0*	FDD
eNodeB TLA3.0	TDD

* eNodeB LA3.0 stands for LA3.0.0, LA3.0.1 & LA3.0.2

The 5620 SAM supports the following types of eNodeB configuration for Controller Boards and Base Band Modules in the Digital Baseband Unit (DBU) in LA2.0/TLA2.1:

- Controller Board—CB3 (eCCM-U with Xalyo MDA), CB4 (eCCM-U with a GigEMDA)
- Modem Board—DBU3 with carrier board type eCCM-U and up to three eCEMs
- TRDU or RRH with dual Tx ports

A framework for eNodeB SW upgrade is provided by the 5620 SAM through a policy-based mechanism. The policy supports the following options:

- select a set of nodes to which SW will be downloaded
- schedule for later or immediate execution
- immediate activation after download

Note: By default, there are pre-created policies that represent different families of nodes or technology areas. The eNodeB policy is represented by the RAN Policy (ID 5). The

user may create new policies, or modify those that are already present by clicking on the Create or Properties buttons (respectively).

In the Software Upgrade Policy, the operator may configure FTP or SFTP.

The operator can enter the Software Information directly in the Software Upgrade Manager window by selecting the Software Image tab. From this tab, the operator can list and import new Software Images that are compatible with the eNodeB.

The upgrade process can be monitored with the Software Upgrade Status object, which is accessible via the Software Upgrade Status tab that is visible on both the Software Upgrade Manager and the Software Upgrade Policy forms. The information shown by this object consists of general information on the node that is being supervised by this

Upgrade Status object, the policy being used for Software Upgrade, details on the current progress of the upgrade, information on the files used for the upgrade, and transition states.

The following upgrade paths are supported:

Final Rel \ Intial Rel	LA2	LA3.0	TLA2.1	TLA3.0
LA2.0	X			
LA3.0	X	X		
TLA2.1			X	
TLA3.0			X	X

Feature Benefits

Allows the support and upgrade of FDD/TDD LA2.0/TLA2.1 to LA3.0/TLA3.0.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

Only sFTP data transfer for software download is supported and not FTP protocol.

Engineering Impacts

N/A

Operational Requirements

N/A

FN2330 - 5620 SAM eNodeB Element Management/ 8.0 R7

Feature Description

The 5620 SAM displays the physical components that comprise an eNodeB in the existing equipment tree. These include the following:

- eNodeB (NE Level)
- D2U (Shelf level d2U)
- CB (eCCM w GigEMDA)
- BB (eCEM)
- RRH & antenna port
- TRDU

The alarms are reported in the element tree, accessed from the equipment tree.

5620 SAM supports a properties form for each level in the NE equipment tree and Field Replaceable Units (FRU). This form supports the configuration and viewing of data associated with the physical component.

For example, the shelf properties form displays general information about the shelf, DBU, power supplies, card slots, ports, timing, statistics, and faults.

The 5620 SAM provides the ability to launch a single node tree instance, which provides a view of the subtending logical components at the NE level in the equipment tree.

The 5620 SAM supports the representation of the NE in the physical network map and allows operators to create links between eNodeBs, or between an eNodeB and another element managed by the 5620 SAM (such as the 7705 SAR and 9471 MME).

5620 SAM supports the discovery of the eNodeB through extensions to its existing discovery and mediation policies. Upon discovery, 5620 SAM synchronizes itself with the configuration state of the newly discovered NE via its SNMP-based mechanism, combined with the eNodeB platform's Netconf interface (required for eNodeBs that are already deployed and/or configured).

A new mediation policy, associated with a discovery rule, has been defined to allow the automatic invocation of the self-configuration capability (SON) for the eNodeB (NM2335).

The 5620 SAM supports the inventory function for all physical components associated with the NE and for SW versions associated with the NE. The user is able to export the inventory content into a file through the NBI of the 5620 SAM.

5620 SAM supports a command execution manager that provides the operator with a view of the ongoing and previously executed tasks in a single list. The user for each type of view can display all records of a specific type and filter on the following attributes:

- date or date range
- NE
- task name
- status (failed, in progress, succeeded)
- user/client ID

The 5620 SAM permits the creation of up to 2 IP interfaces on an eNodeB: transport and OAM. Both IPv4 and IPv6 are supported by 5620 SAM (see FN2329 – 5620 SAM eNodeB Security Extension).

Feature Benefits

This feature provides full management of eNodeB elements and integrates them into the framework of the 5620 SAM. This allows an end-to-end view for the network and management of IP nodes, mobile backhaul, and mobile access from a single standpoint.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

IPV6 OAM link is supported from 9.0 R1

Engineering Impacts

N/A

Operational Requirements

N/A

FN2336 – eNodeB Licensing

Feature Description

The goal of this feature is to introduce a licensing mechanism for function and capacity, which are licensed separately from the main eNodeB functionality set.

The license set that a customer purchases is produced by the LKDI and defined in a digitally signed file. This file contains licenses that are applicable to the portion of the network that is covered by the management scope of a single 5620 SAM platform. If the eNodeB network is segregated into multiple management scopes, then an individual license file will be required and must be deployed on each 5620 SAM platform. Dividing the total set of licenses into subsets appropriate for each SAM management scope is outside the scope of this feature.

This license file is placed on the 5620 SAM server and the file contents are used to control the configuration (at activation of a work order file or as result of online configuration via the SAM GUI) of eNodeB features and capacities. In addition to feature and capacity licenses, a license may have an expiration date after which the feature license can no longer be configured. Alarms are generated in the event that a license file is found to be invalid, if license usage/expiration thresholds are crossed, or if certain conditions (defined below) cause license violations to occur.

A reporting capability via the SAM GUI is required so that an operator can determine the state of consumption of the various licensed managed by the 5620 SAM. When a particular license type (feature or capacity) passes configurable consumption thresholds, an alarm is raised and an optional email is generated to indicate that a threshold has been crossed.

Feature Benefits

This feature is intended to give the user more flexibility in the management of purchased capacity and features, and to allow the user to smoothly manage a pool of capacity and functionality tokens.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2830 – NEM cross-launch from SAM in a different sub-network

Feature Description

The 5620 SAM supports the launch of NEM software from the SAM GUI to access an eNodeB that is located in either the same, or in a different, sub-network.

Feature Benefits

This feature ensures the correct handling of NEM direct launch from 5620 SAM.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM 9400 NEM	N/A	5620 SAM 8.0 R8 9400 NEM LA3	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

A maximum of 20 NEM per 5620 SAM server can be run in parallel.

A single user can launch several NEM from is 5620 SAM client GUI.

This feature is not supported on IPV6 OAM link in SAM 9.0 R1.

Engineering Impacts

Following port allocation is reserved for the NEM proxy launch : 6100 to 6119

Operational Requirements

N/A

3.3 5620 SAM Fault Management – First Alert

FN2331– 5620 SAM eNodeB State Management

Feature Description

This feature will provide enhancements in the area of Fault Management by supporting the following states and statuses for the underlying MOs in support for the eNodeB:

> **Administrative** (configurable on select MOs): Operational, Availability Status: Communication (read-only), Managed state (declared in GUI but not connected).

> **Connection State** Offline, Not Connected, Online

The correlation capability of the 5620 SAM is extended to include operational state dependencies for the MOs belonging to the eNodeB.

A dedicated tab in the properties form is dedicated to the information regarding the state management.

The 5620 SAM framework has been enhanced to support eNodeB-generated alarms and display them within the alarm view in order to have one single point of alarming towards all NEs supported by the 5620 SAM (such as MME, eNodeB, SGw, and PGW). In addition, all functionalities of the 5620 SAM framework will be applicable to the alarms generated by the eNodeB (acknowledge, delete, filter, and view history).

The user can filter on any column of the alarm view to focus on aspects of an alarm such as type, object, and severity. It is possible to build complex filters based on multiple criteria.

The user can access the alarm details by opening the alarm form. The alarm form displays all information sent by the eNodeB, and some additional details describing the fault.

The user has the ability to acknowledge an alarm, and change its severity (increase, decrease, and set a note about the alarm).

The user can also activate and deactivate the audible alarms function.

Feature Benefits

The user has access to the full framework of fault management with the 5620 SAM, including an extensive set of features that present an end-to-end alarming view for all NEs managed by the 5620 SAM platform.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2454 – 5620 SAM Supervision

Feature Description

This feature provides the user with a way to access the supervision view of the network in a smart, summarized, and web-based GUI that displays the main states and alarms for a group or a list of objects.

The main GUI is split into three components:

- Summary View
- Tabular View (contains tabs and matrix view)
- Detailed Alarm View

The Summary View allows the supervision of key information on a per-Zone or per-Group basis for equipment, such as the number of disabled cells or disabled links within the group.

The Tabular View displays a list of equipment that is declared in a group and focuses on 4 main aspects: Network Elements, Radio Resources, Interface Resources, and a Matrix

View that displays key item information, such as operational state and administrative state.

The Detailed Alarm view displays alarm details for an equipment group.

A graphical representation of the table is available through a dedicated view called matrix view.

In addition to these supervision functions, the user can launch the supervision view with a single click with single sign-on and the associated properties form of the 5620 SAM.

Feature Benefits

This feature provides an operator with access to a light supervision of the network and facilitates the link between the supervision and configuration functions of the 5620 SAM.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

3.4 5620 SAM Configuration Management

FN2333- 5620 SAM eNodeB Configuration Management

Feature Description

This feature provides enhancements to the area of Configuration Management by supporting the configuration of 9412 eNodeB equipment. On-line configuration changes can be made to a single eNodeB via the SAM GUI (using policies/templates). The classic property form, with tabs and functions, is extended to support eNodeB equipment.

Error checking done by the 5620 SAM in the context of on-line configuration is limited to intra-NE configuration semantic/syntactic/range checks.

In addition, specific parameters are marked by icons within the property form to identify parameters for which modification has a supervision or service impact.

In terms of off-line configuration, the 5620 SAM is able to interact with the WPS in order to exchange configuration snapshots and workorders for bulk configuration changes.

In order to activate workorders produced by the WPS, the 5620 SAM provides a dedicated activation manager that allows the user to manage the different sessions, import workorders, launch a wide set of checks, and activate the changes in the network. In addition, the system provides a “one-shot” fallback mechanism that allows users to revert the changes that have been caused by workorder activation.

All offline configuration functions are schedulable through the activation manager in order to plan the application of parameter changes in accordance to user needs.

Feature Benefits

This feature allows the user to integrate eNodeB equipment into a full configuration management framework, with the same look and feel as the other nodes managed by the 5620 SAM. This provides a quick and understandable way for the user to apply the same configuration mechanism to the entire network.

In addition, the established mechanism for offline configuration management and interaction with the WPS is maintained. This allows the user to pre-provision the network in the back office and apply the bulk changes to the network.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM 9452 WPS	N/A	5620 SAM 8.0 R7 9452 WPS LA3	103952 – WPS support of LA3.0	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2335 - 5620 SAM eNodeB Self Configuration

Feature Description

This feature describes the capability of the 5620 SAM to pre-provision eNodeB equipment, activate discovery rules, and automatically configure and upgrade the software of managed NEs.

The user is able to create a pre-provisioned configuration either offline through the WPS, or online through the 5620 SAM pre-provisioning capabilities. The goal of the first task is to provide users with a way to create a starting configuration in terms of release, SW load state, and configuration parameters that will be applied on the node when it appears in the network.

The user can specify which policy needs to be applied for discovery of the node. The process flow consists of 4 main steps:

- eNodeB auto-start
- SW download
- configuration deployment
- set administrative state to enable

This allows the user to control which steps are performed automatically, and which steps require manual intervention from the user.

When the nodes are detected by the 5620 SAM, the steps specified by the Self-Config Policy are applied and a dedicated GUI allows the user to follow the steps of the self-configuration.

At the end of this operation, the eNodeB is up and running with the correct SW version, the pre-provisioned configuration is applied, and the eNodeB is fully integrated with the LTE EPC. This all requires a very low level of manual action on site.

Feature Benefits

Self-Configuration of the eNodeB simplifies and accelerates the process of deploying RAN NEs by allowing the operator to move through the deployment phase much more rapidly than has been possible in the past. This is accomplished by pre-provisioning the configuration in the back office and integrating the eNodeB into the network via a "plug and play" mechanism.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

Configuration pre-provisioning shall be done prior to put eNB on the network.

Discovery rule associated to the IP@ of the pre-provisioned NE shall be created prior to put eNB on the network.

3.5 5620 SAM Self Organizing & Optimizing Network

FN2339 - 5620 SAM eNodeB Auto Neighbour Relation

Feature Description

In order to minimize pre-provisioning during the deployment and ongoing planning of LTE Networks, the eUTRAN (eNodeB and 5620 SAM) automates the configuration of network parameters. This automation includes the X2 and the LteCell neighbouring relations configurations, including white and black lists.

The user is able to manage, at the 5620 SAM level, the input parameters needed for the ANR mechanism to run at the eNodeB level, such as thresholds and timers. In addition, the 5620 SAM takes the system of black-lists (cells that can never be added as neighbours of the primary cell) and white-lists (cells that can never be deleted from the neighbouring list of the primary cell) into account.

When ANR is running and active phase of ANR completed at eNodeB level, the X2 relationship and LteCell neighbours are updated in the 5620 SAM to reflect the changes.

Feature Benefits

This feature is viewed as a key feature in the implementation of the Self Optimizing Network functionality of the LTE product portfolio. This feature benefits the operator by reducing OPEX through the automation of the labor-intensive tasks of neighbour list generation and updates during times of network rollout and upgrade.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

First initial configuration, including black list and white list can be created with 9452 WPS prior to activate the ANR in order to speed the convergence of neighbouring list. Anyway it is possible to start ANR without any initial configuration.

FN2338 - 5620 SAM eNodeB Physical Cell ID

Feature Description

In order to minimize pre-provisioning during the deployment and ongoing re-planning of LTE Networks, the eUTRAN (eNodeB and 5620 SAM) automates the configuration of network parameters for the Physical Cell ID (PCI).

For online modification of PCI by the eNodeB, linked with the ANR function, the configuration at the 5620 SAM level is updated to take the new PCI values into account.

Feature Benefits

This feature, coupled with the eNodeB feature “81873 Automatic Configuration of PCI”, is viewed as a key feature for the implementation of the Self Optimizing Network functionality in the LTE product portfolio. As a component of Self Optimizing Network function, this feature benefits the operator by reducing OPEX through the automation of PCI configuration.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

Initial PCI configuration is created with 9452 WPS.

3.6 Wireless Provisioning System (9452 WPS)

103952 - WPS support of LA3.0

Feature Description

The goal of this feature is to provide the support of the new LA3.0 release into WPS framework by updating models, parameters templates, and checks.

The WPS is fully integrated into the tool chain for configuration management with 5620 SAM.

Feature Benefits

The WPS allows users to create bulk changes and modifications, and run dedicated checks on the nodes and the network in order to produce workorders that can be applied to the network via the 5620 SAM.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
9452 WPS	N/A	9452 WPS LA3.0	N/A	LA2.x, LA3.x eNB 5620 SAM 8.0 R7/9.0 R1	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

96451 - WPS bulk eNodeB creation operation

LA3.0 WPS IP v4 to Ipv6 Bulk migration

Feature Description

This feature enables the definition of bulk procedures based on wizard operations in order to avoid manual input operations. WPS LA3.0 enables bulk eNodeB creation by using excel spreadsheets as input for eNodeB creation, cell definition, and S1/X2 creation.

This feature also allows a bulk migration of IPV4 addresses to IPV6.

Feature Benefits

This feature saves time by allowing the user to avoid operations that are labor-intensive, especially in the case of large networks.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
9452 WPS	N/A	9452 WPS LA3.0	N/A	LA2.x, LA3.x eNB 5620 SAM 8.0 R7/9.0 R1	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

3.7 5620 SAM Performance Management Activation, Collection & Mediation

FN2332 - 5620 SAM eNodeB Performance Management

FN2453 - Support of eNodeB PM catch-up

Feature Description

This feature allows users to enable and set the granularity period of statistics retrieval from the eNodeB to the 5620 SAM. The collection of data records is done via SNMPv3 protocol from the eNodeB at a minimum of 5 min for eNodeB LA3, and a minimum of 15 min for eNodeB LA2.

The user can assign policies with different granularities for dedicated subsets of eNodeBs. The collected data is converted to 3GPP XML format on the 5620 SAM servers for collection via SFTP by north-bound systems. The data is duplicated on 5620 SAM redundant systems. The system is capable of "catch-up" of eNodeB counters in case of temporary unavailability of the eNodeB or OAM link for a period of time (maximum 72 hours), and allows the collection of the data file on the 5620 SAM HDD.

Feature Benefits

The collection of counter files is a key function for allowing the user to monitor network performance. It allows an external system to integrate the results into a complex framework for performance monitoring and optimization, such as the Alcatel-Lucent Network Performance Optimizer (9459 NPO).

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2337 - 5620 SAM eNodeB Call Trace Support

Feature Description

This feature allows users to enable and set the input of call trace sessions and provides retrieval of the files from the eNodeB to the 5620 SAM. This feature requires dedicated HW such as a CT Aux server to be added to the existing 5620 SAM architecture.

The activation mechanisms are schedulable, and the system allows the retrieval of data in binary format via UDP streaming and conversion into 3GPP format for external analysis.

5620 SAM supports integration with Wireless Trace Analyzer in LE3.0.

Feature Benefits

The collection of Call Trace files is a key function for allowing the user to troubleshoot and optimize network performance. It allows an external system to integrate the results into Alcatel-Lucent Wireless Trace Analyzer (9458 WTA).

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	CT AUX server	N/A	N/A	LA2.x, LA3.x eNB	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2411 - 5620 SAM MG Bearer List Query Filtering

Feature Description

The 5620 SAM provides a powerful bearer query feature for MG as of release 8.0 R3 or later. The 5620 SAM 9.0 release extends bearer queries with improved filtering. For example, one can scope down to specific bearers, EPC groups, nodes, and so on for a more focused view of the session that the operator is interested in troubleshooting. See the 5620 SAM manuals for a complete list of filterable objects in the User Bearer Queries.

Feature Benefits

It can be challenging to discover the location and configuration bearers for a particular UE in the network. The SAM provides the ability to search multiple nodes to query and display bearer information based on IMSI or other identifier information. This feature allows the user to define a filter that scopes the nodes being searched thereby reducing query times and increasing the overall performance of the UI.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	7750 MG	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2457 - 5620 SAM MG Peer Stat Aggregation

Feature Description

The 5620 SAM will provide total peer stats for each card in an aggregated stat located directly under the Global stats in the hierarchy. Custom aggregated stats will give the user a global view of session counts, throughput, and other performance data across the MG SGW/PGW cards, offering improved usability for graphing and TCA. The data will be placed within the MG stats hierarchy along with other KPI/KCI values; for example, MG aggregations will be grouped under MG global card stats at the same hierarchy level as MG card stats.

Note: MG stat aggregation is a new SAM stat and therefore is not available for the real-time statistics plotter.

Feature Benefits

It can be very challenging for an operator to gain a view of overall throughput or error counts for an MG instance. For example, finding the error rate toward an MME peer for an MG with four line cards is very difficult, as is graphing. The aggregated statistic that is currently supported in the MG (table stat row 0) now gives a fully rolled up view of related peer counters on the MG. Users may use this data directly to set thresholds, or for troubleshooting activities like graphing.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	7750 MG	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2641 - 5620 SAM MG 3GPP Lawful Interception

Feature Description

The 5620 SAM will support lawful intercept on the MG by modeling LI session initiation into the existing SAM support models for SROS. Existing models include a special LI user that has different view permissions for call trace sessions and services from the normal operations users and initiation interfaces on SAM-O. The 5620 SAM R9.0 R3 will also extend existing support with the ability to persist call trace sessions; for example, the SAM will re create trace sessions after a node restart or upgrade event. Future MG releases plan support for direct interfaces – for example, X2 – at which time 5620 SAM support will target management of the interface configuration, policies and status on the MG.

Feature Benefits

This feature is required for north bound call lawful intercept tools by sustaining the current integration points and interfaces provided by SROS and SAM for initiation of

intercept sessions. As such existing integrations will require only minor enhancement to support LI initiation through the SAM-O interface.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	7750 MG	N/A	N/A

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

3.8 5620 SAM External Interfaces

FN2341 - 5620 SAM 3GPP Compliance for SAM-O

Feature Description

This feature introduces a 3GPP R8 CORBA-compliant interface for the 5620 SAM. Compliance is provided for the following IRPs:

- 32.762 NRM
- 32.363 Entry Point IRP
- 32.303 Notification IRP
- 32.353 Communication Surveillance IRP
- 32.111 Alarm IRP
- 32.603 Basic CM IRP
- 32.663 Kernel IRP
- 32.311 Generic IRP

Feature Benefits

This feature allows 5620 SAM to be integrated within a customer's OSS environment using standardized 3GPP interfaces.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 8.0 R7	N/A	5620 SAM-O	Support for eNB / MME;	3GPP R8, CORBA

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
				LA2.x, LA3.x eNB	ePC (future)	Solution-Sets

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2610 - 3GPP compliance for SAM-O step 2 (CNBI R3.0.1)

Feature Description

Provides inventory data for 4G NEs (eNodeB and MME) in 3GPP R8 compliant XML form.

Compliance to 3GPP R8 32.695. (Inventory Management XML data)

Inventory data is provided for all FRU (Field Replicable Units) for all hardware.

Feature Benefits

This feature allows inventory data to be exported in a 3GPP-compliant format for easy integration into a customer's OSS systems.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	5620 SAM-O LA2.x, LA3.x eNB	eNB, MME; ePC (Future)	3GPP XML data

Restrictions/Limitations

N/A

Engineering Impacts

N/A

Operational Requirements

N/A

FN2340 - 5620 SAM-CDMA Horizontal Integration

Feature Description

Integrates Alcatel-Lucent 9253 OMC-RAN into a 5620 SAM Installation. Allows single-seat administration of 5620 SAM and up to 4 9253 OMC-RAN.

A single fault-management and alarm administration view, with reach-through to 9253 OMC-RAN for more advanced management of the CDMA domain.

Feature Benefits

Provides an integrated management solution for customers who are operating Alcatel-Lucent 4G and CDMA networks, and providing a best-of both-breeds solution.

Operators can keep their existing investment of CDMA technology, and this feature provides a bridge as they move to 4G.

Impacted systems	Dependencies					
	Hardware	Software	Feature	Interworking	Devices	Standards
5620 SAM	N/A	5620 SAM 9.0 R1	N/A	LA2.x, LA3.x eNB Target release OMC-RAN R37 with SAM 9.0 R3	N/A	N/A

Restrictions/Limitations

In SAM 9.0 R1, the enabler for SAM-OMC-RAN integration is delivered but requires the corresponding OMC-RAN release that embedded his part of the solution and that will be available in 9.0 R3 timeframe.

Engineering Impacts

N/A

Operational Requirements

N/A

4 References

The references always list the latest revision of the documentation.

> 5620 SAM LTE RAN RELEASE DESCRIPTION | 8.0R7 3HE 06532 AAAA TQZZA Edition 01

5 Glossary

Term	Expansion
eNodeB	Refers to the Base Station of the EUTRAN Network
LTE	Long Term Evolution
EUTRAN	Enhanced Universal Terrestrial Radio Access Network
RU	Rack Unit
BBU	Base Band Unit
9459 NPO	Network Performance Optimizer
9458 WTA	Wireless Trace Analyzer
9452 WPS	Provisioning System
MME	Mobility Management Entity
PGW	PDN Gateway
SGW	Serving Gateway
ePC	Evolved Packet Core