Telefónica

CAMARA EDGE CLOUD STATUS

Scope, APIs and Issues

INSERT SUBHEADING

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Edge Cloud Scope – Analysis and redefinition if needed

Scope (from Github)

Service APIs for “Edge Cloud”. It provides the customer with the ability to:

- Provide and manage application images to be deployed on resources within the operator network
- Use reserved compute resources within the operator network for the deployment of applications on VMs or containers
- Influence the traffic routing from the user device toward the Edge instance of the Application.

NOTE: The scope of this API family should be limited (at least at a first stage) to 4G and 5G.

Describe, develop, document and test the APIs (with 1-2 Telcos)

Proposal: To include “Optimal Edge selection base on operator network capabilities” or similar in the scope.

Edge Cloud Scope – Analysis and redefinition if needed

Scope (from Github)

Service APIs for “Edge Cloud”. It provides the customer with the ability to:

- Provide and manage application images to be deployed on resources within the operator network
- Use reserved compute resources within the operator network for the deployment of applications on VMs or containers
- Influence the traffic routing from the user device toward the Edge instance of the Application.

NOTE: The scope of this API family should be limited (at least at a first stage) to 4G and 5G.

Describe, develop, document and test the APIs (with 1-2 Telcos)

Proposal: To include “Optimal Edge selection base on operator network capabilities” or similar in the scope.

Edge Cloud APIs Status – Traffic Influence end Edge Cloud

- **Traffic Influence APIs:**
  Influence the traffic routing from the user device toward the Edge instance of the Application.
  - **V1.0.0**: this version will still cover LBO and will be fully aligned with CAMARA guidelines.
  - **V2.0.0**: this release will support UE Mobility. The work on this release is started with the draft of the User Story in OPAG

- **Edge Cloud APIs:**
  Provide and manage application images to be deployed on resources within the operator network.
  Use reserved compute resources within the operator network for the deployment of applications.
  Select the most adequate edge site based on developer requirements where the application should be deployed.
  There are three different contributions for these APIs:
  - **Aligned with GSMA OP (provided by Capgemini)**
  - **5GFF APIs (provided by Vodafone)**
  - **Aligned with mobiledgex github (provided by EdgeXR)**

CAMARA EDGE CLOUD STATUS

Intents and mapping to APIs

Developer intents: Provisioning intents	5SED	5MEE	EXRA (Mixture of EXRC and EXCA)	EXRC	EXCA	EXSM	GMEC
1. “I can retrieve a list of the operator’s MECs and their status, ordering the results by location and filtering by status (active/inactive/unknown)”	No	Yes	Yes	N/A	N/A	N/A	N/A
2. "I can discover the capabilities/resources available at an operator’s MEC: CPU, Memory, Storage, GPU"	No	Yes	Yes	N/A	N/A	N/A	N/A
3. "I can discover the geographical regions covered by the operators MECs"	No	Yes	Yes	N/A	N/A	N/A	N/A
4. "I can discover the closest MEC platform to a specific terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A
5. "I can ask the operator to provision my application server to the optimal MEC for a specific terminal, taking into account connectivity, resources (e.g. vCPU, Memory, network interfaces, storage, GPU) shortest network path, cost, network load, MEC platform load, application privacy considerations etc."	No	Yes	Yes	N/A	N/A	N/A	Yes
"I can ask the operator to provision my application server to all MECs that meet these criteria (note this is not focussing on a specific terminal)"	N/A	N/A	N/A	N/A	N/A	N/A	N/A
"I can ask the operator to provision my application server to a minimal set of MECs that meet these criteria across a given footprint (note this is not focussing on a specific terminal)"	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. "I can ask the operator to inform me if the optimal MEC for my application and a specific terminal changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A
7. “I can ask the operator to store artifacts e.g., container images or VM images and manifests describing required resources, Helm charts etc”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
8. “I can ask the operator to provide the artifacts details for already stored artifacts”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
9. “I can query the list of applications linked with a given artifact”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
10. "I can ask the operator to link artifacts to the applications when onboarding my applications"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
11. "I can ask the operator to delete an existing artifact(s)"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
12. "I can ask the operator to reserve compute, network and storage required for my application in various MEC locations"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
13. “I can ask the operator to use reserved resources for my application to earlier on various MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
14. "I can ask the operator to delete an existing reserve reservation"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
15. “I can ask the operator to remove my application from a set of MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
16. “I can ask the operator to provide the details of all the onboarded applications”	N/A	Yes	N/A	N/A	N/A	N/A	Yes
17. "I can ask the operator to inform about the application instance details e.g., communication endpoints, resource consumed etc"	N/A	Yes	N/A	N/A	N/A	N/A	Yes
18. "I can ask the operator to terminate the running instance of my application"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
Developer intents: Runtime intents	**5SED**	**5MEE**	**EXRA (Mixture of EXRC and EXCA)**	**EXRC**	**EXCA**	**EXSM**	**GMEC**
19. "I can discover the closest MEC platform to a particular terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A
20. "I can discover the optimal MEC platform for my application and a particular terminal, taking into account connectivity, shortest network path, cost, network load etc." (A)	No	Yes	N/A	Yes	N/A	N/A	N/A
21. "I can discover the optimal application service endpoint for a specific terminal, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A
22. "I can ask the operator to move my running application instance to a different MEC if the closest MEC changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc." (B)	No	Unsure	N/A	Unsure	N/A	N/A	N/A
Operator intents: Provisioning intents	**5SED**	**5MEE**	**EXRA (Mixture of EXRC and EXCA)**	**EXRC**	**EXCA**	**EXSM**	**GMEC**
23. “I can publish an (ordered, filtered) list of my MECs, their coverage, capabilities and status” *(aligns with 1,2,3 in the developer intents)*	No	Yes	Yes	N/A	N/A	N/A	N/A
24. “I can map an application’s requirements to the best MEC for hosting it, based on application demands for CPU,Memory,Storage,GPU,bandwith,Network forecast, mobility” *(aligns with 4,5,8,9)*	No	Yes	Yes	N/A	N/A	N/A	N/A
Operator intents: Runtime intents	**5SED**	**5MEE**	**EXRA (Mixture of EXRC and EXCA)**	**EXRC**	**EXCA**	**EXSM**	**GMEC**
25. “I can inform the developer of any event which changes which MEC is optimal for their application and connected terminals” *(aligns with 6)*	No	Yes	N/A	Yes	N/A	N/A	N/A
26. “I can move a running application to a new MEC and inform the developer of the new service endpoint to connect to” (B) *(aligns with 10)*	No	Unsure	N/A	Unsure	N/A	N/A	N/A

Notes

A this may not be the closest MEC, rather the 'best MEC for this job' which accounts for current MEC or network load, MEC copmute power and features etc.

B the operator may wish to achieve this through signalling the terminal to change to a network anchor point ('user plane function'/'packet gateway) instead.

Constraints of Edge Cloud APIs

5GFF - Simple Edge Discovery

- not application aware (does not take into account the application's requirements for MEC, e.g. compute resources)
- must be called by the network-attached UE hosting the client application

5GFF - MEC Exposure & Experience Management

- no constraints (to be checked)

GSMA/EdgeXR

- requires UNI to be called from the UE hosting the client application

GSMA/OPAG

- TBD

CAMARA EDGE CLOUD STATUS

Intents covered by only one API

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
7. “I can ask the operator to store artifacts e.g., container images or VM images and manifests describing required resources, Helm charts etc”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
8. “I can ask the operator to provide the artifacts details for already stored artifacts”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
9. “I can query the list of applications linked with a given artifact”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
10. "I can ask the operator to link artifacts to the applications when onboarding my applications"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
11. "I can ask the operator to delete an existing artifact(s)"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
12. "I can ask the operator to reserve compute, network and storage required for my application in various MEC locations"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
13. “I can ask the operator to use reserved resources for my application to earlier on various MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
14. "I can ask the operator to delete an existing reserve reservation"	N/A	N/A	N/A	N/A	N/A	N/A	Yes
15. “I can ask the operator to remove my application from a set of MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes
18. "I can ask the operator to terminate the running instance of my application"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

Proposal: Table to be filled by every contributor with Yes or No

CAMARA EDGE CLOUD STATUS

Intents covered by more than one API (5GFF, EDGEXR & GSMA OPAG)

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
1. “I can retrieve a list of the operator’s MECs and their status, ordering the results by location and filtering by status (active/inactive/unknown)”	No	Yes	Yes	N/A	N/A	N/A	N/A
2. "I can discover the capabilities/resources available at an operator’s MEC: CPU, Memory, Storage, GPU"	No	Yes	Yes	N/A	N/A	N/A	N/A
3. "I can discover the geographical regions covered by the operators MECs"	No	Yes	Yes	N/A	N/A	N/A	N/A
4. "I can discover the closest MEC platform to a specific terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A
5. "I can ask the operator to provision my application server to the optimal MEC for a specific terminal, taking into account connectivity, resources (e.g. vCPU, Memory, network interfaces, storage, GPU) shortest network path, cost, network load, MEC platform load, application privacy considerations etc."	No	Yes	Yes	N/A	N/A	N/A	Yes
6. "I can ask the operator to inform me if the optimal MEC for my application and a specific terminal changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A
16. “I can ask the operator to provide the details of all the onboarded applications”	N/A	Yes	N/A	N/A	N/A	N/A	Yes
17. "I can ask the operator to inform about the application instance details e.g., communication endpoints, resource consumed etc"	N/A	Yes	N/A	N/A	N/A	N/A	Yes

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Intents covered by more than one API (5GFF & EdgeXR)

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
19. "I can discover the closest MEC platform to a particular terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A
20. "I can discover the optimal MEC platform for my application and a particular terminal, taking into account connectivity, shortest network path, cost, network load etc." (A)	No	Yes	N/A	Yes	N/A	N/A	N/A
21. "I can discover the optimal application service endpoint for a specific terminal, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A
Operator intents: Provisioning intents							
23. “I can publish an (ordered, filtered) list of my MECs, their coverage, capabilities and status” (aligns with 1,2,3 in the developer intents)	No	Yes	Yes	N/A	N/A	N/A	N/A
24. “I can map an application’s requirements to the best MEC for hosting it, based on application demands for CPU,Memory,Storage,GPU,bandwith,Network forecast, mobility” (aligns with 4,5,8,9)	No	Yes	Yes	N/A	N/A	N/A	N/A
Operator intents: Runtime intents							
25. “I can inform the developer of any event which changes which MEC is optimal for their application and connected terminals” (aligns with 6)	No	Yes	N/A	Yes	N/A	N/A	N/A

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Intents not covered by any API

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
22. "I can ask the operator to move my running application instance to a different MEC if the closest MEC changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc." (B)	No	Unsure	N/A	Unsure	N/A	N/A	N/A
Operator intents: Runtime intents							
26. “I can move a running application to a new MEC and inform the developer of the new service endpoint to connect to” (B) (aligns with 10)	No	Unsure	N/A	Unsure	N/A	N/A	N/A

Proposal: Volunteers to develop the missed APIs

High-level analysis for every API – Method Types

Contributor	API Name	Abreviation	API yaml file	GET	POST	PUT	PATCH
GSMA EdgeXR	EdgeXR Controller APIs for Apps	EXCA	edgexr-nb-openapi.yaml	0	254*	0	0
GSMA EdgeXR	EdgeXR application client edge interaction APIs	EXRC	App.yaml	0	4	0	0
GSMA EdgeXR	EdgeXR application client edge interaction APIs	EXRC	app-client.yaml	0	3	0	0
GSMA EdgeXR	EdgXR Session Management API	EXSM	session.yaml	0	1	0	0
GSMA Capgemini	GSMA OPAG/Capgemini MEC Edge Cloud API	GMEC	EdgeCloudApi_v0.0.5.yaml	8	8	0	2
5GFF APIs (Vodafone)	5GFF MEC Exposure & Experience Management	5MEE	MEC exposure and experience management.yaml	12	2	2	0
5GFF APIs (Vodafone)	5GFF Simple Edge Discovery	5SED	simple_edge_discovery.yaml	2	0	0	0

*** Most of methods included in that API out of the scope of CAMARA EdgeCloud APIs**

High-level analysis for every API – Basic Functionalities

EdgeXR – Controller APIs for Apps	Comments
User LCM	Not in the scope
Role LCM	Not in the scope
OperatorCode LCM	Not in the scope
Flavor LCM	In the scope?
Automated provisioning policy LCM	In the scope?
AutoScale LCM	Not in the scope
VM Pool LCM	Not in the scope
Cloudlet LCM	**Included in scope**
Cloudlet Pool LCM	In the scope?
Cluster Instance LCM	In the scope?
App LCM	In the scope?
App instance LCM	**Included in scope**
Events Management	Not in the scope
Alert Policy and Receiver Management	Not in the scope
Cloudlet Networks Management	Not in the scope
Repo sync Management	Not in the scope
Billing organization LCM	Not in the scope
Internal config Management	Not in the scope
Metrics Usage info	In the scope?
Federation LCM	Not in the scope
EdgeXR – Application client edge interaction APIs	**Comments**
App instance LCM	**Included in scope,** it seems a subset of Controller API
EdgeDiscovery and UE Interactions	**Included in scope**
EdgeXR – EdgXR Session Management API	**Comments**
UE Session validation	In the scope?

5GFF APIs – MEC Exposure & Experience Management	Comments
Service endpoints discovery	**Included in scope**
MEC Platforms discovery	**Included in scope**
Regions & zones discovery	**Included in scope**
Service Endpoint LCM	**Included in scope** Register and manage the routable Service Endpoints of your deployed applications
Service profile LCM	**Included in scope** Create and manage profiles that describe the service requirements of your MEC applications, such as the required connection bandwidth and maximum latency.
5GFF APIs – Simple Edge Discovery	**Comments**
MEC Platforms Discovery	**Included in scope** Returns the name of the closest MEC platform(s) to the UE that sent the request.

GSMA/OPAG Capgemini – MEC Edge Cloud API	Comments
Application Provider Resource Management	**Included in scope** Static resource reservation for an application provider
Application Artifacts Management	**Included in scope** Management of application descriptors, binaries, charts and packages
Application Onboarding Management	**Included in scope** Register, retrieve, update and remove applications
Edge Cloud Zone Management	In the scope? These are the zone that OP offers to application provider for application deployment and resource reservation.
Application Provider Identity Management	In the scope?

CAMARA EDGE CLOUD STATUS

Intents analysis: Intent 1.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
1. “I can retrieve a list of the operator’s MECs and their status, ordering the results by location and filtering by status (active/inactive/unknown)”	No	Yes	Yes	N/A	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms	Returns a list of optimal MEC Platforms where you can register your deployed application. You can choose to search without passing any of the inputs paramaters or a combination of Service Profile, Region, subscriber density or UEIdentity.	Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?

EXRA	Details	Comments
POST /api/v1/auth/ctrl/ShowCloudlet	Show Cloudlets. Lists all the cloudlets managed from Edge Controller.	Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?

CAMARA EDGE CLOUD STATUS

Intents analysis: Intent 2.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
2. "I can discover the capabilities/resources available at an operator's MEC: CPU, Memory, Storage, GPU"	No	Yes	Yes	N/A	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms	Returns a list of optimal MEC Platforms where you can register your deployed application. You can choose to search without passing any of the inputs paramaters or a combination of Service Profile, Region, subscriber density or UEIdentity.	How can be extracted mec platform resources of a given mec platform? Is it done through service profiles?

EXRA	Details	Comments
POST /api/v1/auth/ctrl/ShowCloudlet	Show Cloudlets. Lists all the cloudlets managed from Edge Controller.	Response includes Object resource_quotas { "alert_threshold": 0, "name": "string", "value": 0 } Would gpu be included here?

Intents analysis: Intent 3.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
3. "I can discover the geographical regions covered by the operators MECs"	No	Yes	Yes	N/A	N/A	N/A	N/A

5MEE	Details	Comments
GET /regions	List the geographical regions supported, and the associated zones	Additional method to GetOptimalPlatformsByRegion

EXRA	Details	Comments
POST /api/v1/auth/ctrl/ShowCloudlet	Show Cloudlets. Lists all the cloudlets managed from Edge Controller. Includes a region parameter per cloudlet	This method does not list directly all available regions, it does not seem to exist a direct method for that.

Intents analysis: Intent 4.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
4. "I can discover the closest MEC platform to a specific terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A

5MED	Details	Comments
GET /mecplatforms	Returns the name of the closest MEC platform(s) to the UE that sent the request. ON receiving this request, the network will calculate which of its MEC platforms have the shortest network path to the UE (terminal) from which the request was made. • If you have a server instance deployed there, connect to it to gain the lowest latency • Or if not, you may wish to deploy an instance there using the APIs of the cloud provider supporting that zone.	This API is intended to be called by a client application hosted on a UE attached to the operator network. Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

EXRC	Details	Comments
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies.	By default use gps_location without taking into account network path Input parameters: gps_location, additionalProp1-3
POST /v1/getappinstlist	Like FindCloudlet, but returns a short list of the best instances instead of a single result, allowing the client to choose based on its own criteria, or maintain several parallel connections to different sites.	Input parameters: gps_location, additionalProp1-3

Intents analysis: Intent 5.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
5. "I can ask the operator to provision my application server to the optimal MEC for a specific terminal, taking into account connectivity, resources (e.g. vCPU, Memory, network interfaces, storage, GPU) shortest network path, cost, network load, MEC platform load, application privacy considerations etc."	No	Yes	Yes	N/A	N/A	N/A	Yes

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*?	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity This method does not cover provision, which API method can be invoked to trigger provision?

EXRA	Details	Comments
POST /api/v1/auth/ctrl/CreateApp	Create Application. Creates a definition for an application for Cloudlet deployment. It supports autoprovision policies triggered in combination with findcloudlet	It requires also autoprovision policy to trigger auto app instance.
POST /api/v1/auth/ctrl/CreateAppInst	Create Application Instance. Creates an instance of an App on a Cloudlet where it is defined by an App plus a ClusterInst key. Many of the fields here are inherited from the App definition	API user needs to specify the cloudlet manually where to instantiate the app, it may use external data to make that decision.
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies. It may trigger autoprovision of app instance in case autoprovision policy is in place	Method invoked from UE nomally: Input parameters: gps_location, additionalProp1-3 Prerequsite autoprovision policy configured By default it uses geo proximity and no other considerations.

GMEC	Details	Comments
GET /application/lcm/{appId}	Instantiates an application on an OP zone. Details about application and zones where application instance should be created. Field 'operator' and 'opCountry' should be specified if the zone belongs to a partner OP.	This is the method to instantiate the app. Which method is used to identify the optimal MEC? Does it take into account all intent options?

Intents analysis: Intent 6.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
6. "I can ask the operator to inform me if the optimal MEC for my application and a specific terminal changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

EXRC	Details	Comments
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies.	By default use gps_location without taking into account network path Input parameters: gps_location, additionalProp1-3
POST /v1/getappinstlist	Like FindCloudlet, but returns a short list of the best instances instead of a single result, allowing the client to choose based on its own criteria, or maintain several parallel connections to different sites.	Input parameters: gps_location, additionalProp1-3

Intents analysis: Intent 7.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
7. “I can ask the operator to store artifacts e.g., container images or VM images and manifests describing required resources, Helm charts etc”	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
POST /artifact	Uploads application artifact on an OP. Artifact is a zip file containing scripts and/or packaging files like Terraform or Helm which are required to create an instance of an application.	An application can consist of multiple components. App providers are allowed to define seperate artifacts for each component or they could define a consolidated artifact at application level. Returns ArtifactId
POST /files	Uploads an image file. Application provider uses this api to onboard an application image to an OP.	Includes parameters: fileType : Indicate if the file is Container image or VM image (QCOW2) imgOSType : Base OS for the image. Currently only “Linux” is supported Returns fileId

Intents analysis: Intent 8.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
9. “I can query the list of applications linked with a given artifact”	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
GET /artifact/{artifactId}	Retrieves details about an artifact.	No method to obtain all available artifacts
GET /files/{fileId}	View an image file from partner OP.	No method to obtain all available files

Intents analysis: Intent 9.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
9. “I can query the list of applications linked with a given artifact”	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
GET /artifact/{artifactId}	Retrieves details about an artifact.	Among parameters returned there is an appProviderId but not AppIds linked, what would be the method to get that information?
GET /files/{fileId}	View an image file from partner OP.	Among parameters returned there is an appProviderId but not AppIds linked, what would be the method to get that information?
GET /application/onboarding/{appId}	Retrieves application details from an OP	Response includes artifactId associated

Intents analysis: Intent 10.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
10. "I can ask the operator to link artifacts to the applications when onboarding my applications"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
POST /application/onboarding	Submits an application details to a partner OP. Based on the details provided, partner OP shall do bookkeeping, resource validation and other pre-deployment operations.	ArtifactId included in request body within appComponentSpecs

Intents analysis: Intent 11.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
11. "I can ask the operator to delete an existing artifact(s)"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
DELETE /artifact/{artifactId}	Removes an artifact from an OP.	It may respond with conflict errors

Intents analysis: Intent 12.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
12. "I can ask the operator to reserve compute, network and storage required for my application in various MEC locations"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
POST /isv/resource/appProvider/{appProviderId}	Reserves resources (compute, network and storage) on OP zones. ISVs registered with home OP reserves resurces on OP zones.	It includes parameters: zoneId,operator,opCountry Flavors,reserveDuration How does it reserve network?

Intents analysis: Intent 13.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
13. “I can ask the operator to use reserved resources for my application to earlier on various MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
POST /application/lcm/{appId}	Instantiates an application on an OP zone.	Details about application and zones where application instance should be created. Where is it linked to a reserved poolId?

Intents analysis: Intent 14.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
14. "I can ask the operator to delete an existing reserve reservation"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
DELETE /isv/resource/appProvider/{appProviderId}/pool/{poolId}	Deletes the resource pool reserved by an ISV	Can it be deleted if it is in use by an applicaction?

Intents analysis: Intent 15.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
15. “I can ask the operator to remove my application from a set of MEC locations”	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
POST /application/onboarding/{appId}/zoneForbid	Restrict/unrestrict application instantiation on a zone	Request body not clear in specification, could you clarify?
DELETE /application/onboarding/{appId}/zone/{zoneId}	Deboards an application from partner OP zones	

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Intents analysis: Intent 16.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
16. “I can ask the operator to provide the details of all the onboarded applications”	N/A	Yes	N/A	N/A	N/A	N/A	Yes

5MEE	Details	Comments
GET /serviceprofiles	List all service profiles registered under your API key	Is this equivalent to app onboarded information?

GMEC	Details	Comments
GET /application/onboarding/{appId}	Retrieves application details from an OP	Required parameters: Appid Is it possible getting the whole list without specifying an appId?

Intents analysis: Intent 17.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
17. "I can ask the operator to inform about the application instance details e.g., communication endpoints, resource consumed etc"	N/A	Yes	N/A	N/A	N/A	N/A	Yes

5MEE	Details	Comments
GET /serviceprofiles/{serviceProfileId}	Fetch a service profile	Response includes: networkResources, computeResources
GET /serviceendpoints/{serviceEndpointsId}	Get registered edge service endpoint information	Response includes: FQDN,port,serviceProfileId

GMEC	Details	Comments
GET /application/lcm/{appId}/instance/{appInstanceId} /zone/{zoneId}	Retrieves an application instance details from OP.	Response includes: FQDN Port
GET /isv/resource/appProvider/{appProviderId}	Retrieves the resource pool reserved by an ISV	Response includes: requestedResources, grantedResources, availableResources, reserveDuration How is it possible to know about resources used by one application instance?

Intents analysis: Intent 18.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
18. "I can ask the operator to terminate the running instance of my application"	N/A	N/A	N/A	N/A	N/A	N/A	Yes

GMEC	Details	Comments
DELETE /application/lcm/{appId}/instance/{appInstanceId}/zone/{zoneId}	Terminate an application instance on a partner OP zone.	Required parameters: Appid, appinstanceId and zoneId

Intents analysis: Intent 19. (Same as Intent 4 in Runtime?)

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
19. "I can discover the closest MEC platform to a particular terminal (closest in terms of shortest network path)"	Yes	Yes	N/A	Yes	N/A	N/A	N/A

5MED	Details	Comments
GET /mecplatforms	Returns the name of the closest MEC platform(s) to the UE that sent the request. ON receiving this request, the network will calculate which of its MEC platforms have the shortest network path to the UE (terminal) from which the request was made. • If you have a server instance deployed there, connect to it to gain the lowest latency • Or if not, you may wish to deploy an instance there using the APIs of the cloud provider supporting that zone.	This API is intended to be called by a client application hosted on a UE attached to the operator network. Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

EXRC	Details	Comments
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies.	By default use gps_location without taking into account network path Input parameters: gps_location, additionalProp1-3
POST /v1/getappinstlist	Like FindCloudlet, but returns a short list of the best instances instead of a single result, allowing the client to choose based on its own criteria, or maintain several parallel connections to different sites.	Input parameters: gps_location, additionalProp1-3

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Intents analysis: Intent 20.

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
20. "I can discover the optimal MEC platform for my application and a particular terminal, taking into account connectivity, shortest network path, cost, network load etc." This may not be the closest MEC, rather the 'best MEC for this job' which accounts for current MEC or network load, MEC copmute power and features etc.	No	Yes	N/A	Yes	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*?	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity

EXRA	Details	Comments
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies. It may trigger autoprovision of app instance in case autoprovision policy is in place, by default only detects optimal MEC where the app was already instantiated	Method invoked from UE nomally: Input parameters: gps_location, additionalProp1-3 Prerequsite autoprovision policy configured By default it uses geo proximity and no other considerations.
POST /v1/getappinstlist	Like FindCloudlet, but returns a short list of the best instances instead of a single result, allowing the client to choose based on its own criteria, or maintain several parallel connections to different sites.	Input parameters: gps_location, additionalProp1-3 It does not detect shortest network path directly it may be used to measure latency from UE to available MECs

Intents analysis: Intent 21. (Very similar to intent 20)

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
21. "I can discover the optimal application service endpoint for a specific terminal, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc."	No	Yes	N/A	Yes	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*?	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity1 Any considerations for mobility events?

EXRA	Details	Comments
POST /v1/findcloudlet	Find the best application service running on a cloudlet in the Edge Cloud for the client to use, based on proximity and other policies. It may trigger autoprovision of app instance in case autoprovision policy is in place, by default only detects optimal MEC where the app was already instantiated	Method invoked from UE nomally: Input parameters: gps_location, additionalProp1-3 Prerequsite autoprovision policy configured By default it uses geo proximity and no other considerations.
POST /v1/getappinstlist	Like FindCloudlet, but returns a short list of the best instances instead of a single result, allowing the client to choose based on its own criteria, or maintain several parallel connections to different sites.	Input parameters: gps_location, additionalProp1-3 It does not detect shortest network path directly it may be used to measure latency from UE to available MECs Any considerations for mobility events?

CAMARA EDGE CLOUD STATUS

Intents analysis: Intent 22.

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
22. "I can ask the operator to move my running application instance to a different MEC if the closest MEC changes, taking into account mobility events, connectivity, shortest network path, cost, network load, MEC platform load etc." The operator may wish to achieve this through signalling the terminal to change to a network anchor point ('user plane function'/'packet gateway) instead.	No	??	N/A	??	N/A	N/A	N/A

5MEE	Details	Comments
?? Unclear API Method related		Clarify how could this intent be achieved with current API

EXRA	Details	Comments
?? Unclear API Method related		Clarify how could this intent be achieved with current API

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Intents analysis: Intent 23.

Operator intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
23. “I can publish an (ordered, filtered) list of my MECs, their coverage, capabilities and status” (aligns with 1,2,3 in the developer intents)	No	Yes	Yes	N/A	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms	Returns a list of optimal MEC Platforms where you can register your deployed application. You can choose to search without passing any of the inputs paramaters or a combination of Service Profile, Region, subscriber density or UEIdentity.	This is the method from Intent1 Developer intents Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?
		Is there an API method to publish alter data of the list of MECs available or is a built-in functionality?

EXRA	Details	Comments
POST /api/v1/auth/ctrl/ShowCloudlet	Show Cloudlets. Lists all the cloudlets managed from Edge Controller.	This is the method from Intent1 Developer intents Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?
POST /api/v1/auth/ctrl/CreateCloudletPool	CloudletPool defines a pool of Cloudlets that have restricted access.	It allows to manage availability of cloudlets to app providers
POST /api/v1/auth/cloudletpoolaccessinvitation/create		

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Intents analysis: Intent 24.

Operator intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
23. “I can publish an (ordered, filtered) list of my MECs, their coverage, capabilities and status” (aligns with 1,2,3 in the developer intents)	No	Yes	Yes	N/A	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms	Returns a list of optimal MEC Platforms where you can register your deployed application. You can choose to search without passing any of the inputs paramaters or a combination of Service Profile, Region, subscriber density or UEIdentity.	This is the method from Intent1 Developer intents Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?
		Is there an API method to publish alter data of the list of MECs available or is a built-in functionality?

EXRA	Details	Comments
POST /api/v1/auth/ctrl/ShowCloudlet	Show Cloudlets. Lists all the cloudlets managed from Edge Controller.	This is the method from Intent1 Developer intents Is the response ordered by location? How can be done the filter by (active/inactive/unknown)? Is there any other call to be used?
POST /api/v1/auth/ctrl/CreateCloudletPool	CloudletPool defines a pool of Cloudlets that have restricted access.	It allows to manage availability of cloudlets to app providers
POST /api/v1/auth/cloudletpoolaccessinvitation/create		

Intents analysis: Intent 25.

Developer intents: Provisioning intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
25. “I can inform the developer of any event which changes which MEC is optimal for their application and connected terminals” (aligns with 6)	No	Yes	N/A	Yes	N/A	N/A	N/A

5MEE	Details	Comments
GET /mecplatforms\?UEIdentityType=[a-zA-Z0-9-]*\&UEIdentity=[a-zA-Z0-9.-]*	Return the optimal MEC platform for a given UE identifier	Method may use this input parameters: region,zone,serviceProfileId,subscriberDensity, UEIdentityType,UEIdentity Is there an specific method to inform that conditions have changed for an app/user or is just the UE that needs to be polling this method and take actions in case of a change?

EXRC	Details	Comments
POST /v1/streamedgeevent	Streams events bidirectionally between device client and the Edge Cloud platform for notifications.	Request body includes: event_type, device_info_Dynamic, custom_event, additionalProp1-3 Could this method be used to implement this intent? How?

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Intents analysis: Intent 26.

Developer intents: Runtime intents	5SED	5MEE	EXRA	EXRC	EXCA	EXSM	GMEC
26. “I can move a running application to a new MEC and inform the developer of the new service endpoint to connect to” (aligns with 10? – To be verified it might be 22) The operator may wish to achieve this through signalling the terminal to change to a network anchor point ('user plane function'/'packet gateway) instead.	No	??	N/A	??	N/A	N/A	N/A

5MEE	Details	Comments
?? Unclear API Method related		Clarify how could this intent be achieved with current API

EXRA	Details	Comments
?? Unclear API Method related		Clarify how could this intent be achieved with current API

Next Steps

- Agree on CAMARA Edge Cloud Group scope (slide 3 proposal and project charter)
- EdgeXR to review its contribution to fit with Edge Group scope
- Review and provide feedback to this document by every contributor
- Having specific meetings to go deeply in the API analysis and understand if there is a real collision or the APIs are complemented.