



Understand your space
like it's digital

Juganu Smart City Solution Commissioning Guide Basic Package

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Introduction

This document presents the Commissioning Guide of Juganu Smart city solution Basic Package.

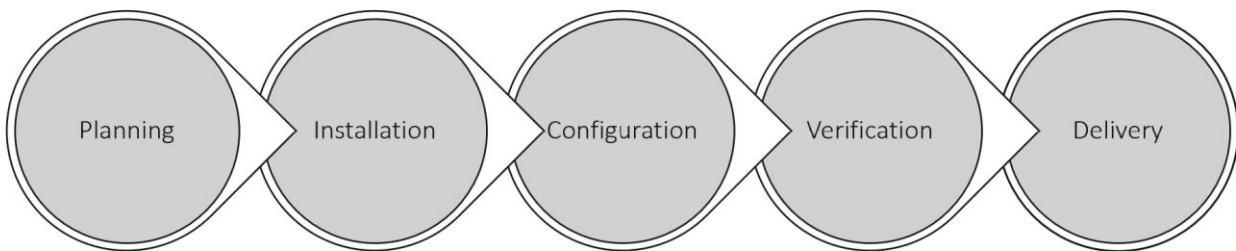
The basic package includes:

- Lights control
- Public WiFi
- Video Stream from two cameras
- Wireless connection to the fixtures

The main HW components in a typical outdoor installation are:

- Smart lighting fixtures and/or controlled lighting fixtures
- Outdoor CAP/JNET-1 Gateway
- Optional server for VMS

The main stages proceed as follows:



Planning

Pre conditions

1. An answered “Customer Questionnaire” with setup details and requirements.
2. Lighting and camera design evaluation to define fixtures types, location and alignment, identify and compensate for any potential physical and technical obstacles in the target area.
3. Network planning of the connectivity setup for all network components: server, CAPs and fixtures.
4. Server when needed. Sizing based on the requirement, including CPU, GPU, RAM & Storage.

Network Planning and Connectivity

The pre-planning stage is essential to determine the IP network requirements and the optimal wireless connectivity option for a site.

IP network

IP network requirements:

- DHCP server to allocate IP addresses
 - Static allocation is preferred
- Connectivity to the internet
- 2 IP addresses to each CAP, one for JNET1 and the other for JNET2
- 2 IP addresses to each fixture, one for JNET2 wireless connection and the other to the edge analytics
 - The edge analytics IP address will be used for the video stream in the following format:
rtsp://<IP address>:8554/juganu_person_detection for the first stream
rtsp://<IP address>:8555/juganu_person_detection for the second stream
 The default streams are H.264, 5MP (2592x1944) and 10 FPS and support both UDP and TCP
- Firewall rules to enable port 443 for cloud connectivity
- Firewall rules to enable <xxx> for LMS connectivity
- Server (when applicable)
 - VMS VM IP address
- Bandwidth (throughput) calculation to meet the network requirement

Wireless connectivity

Determine backhaul location and wireless backhaul between lighting fixtures in a bubble.

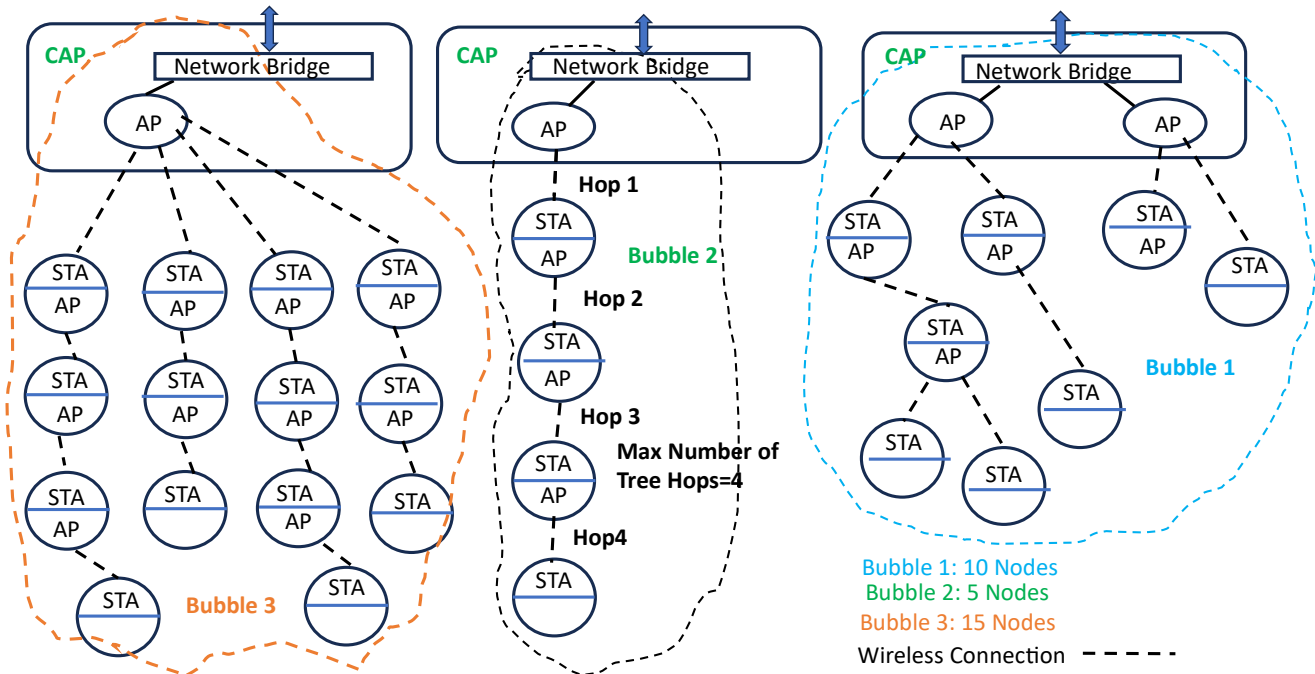
A bubble defined as single channel from a device directly connected to wired backhaul, CAP or Fixture.

Bubble planning:

- Backhaul connection should be 1Gbps link, Ethernet or fiber (where applicable)
- The size of a bubble interconnected by JNET2 wireless transport network is up to 14 fixtures
- Maximum 4 hops between the CAP (or wired fixture) and the last wireless interconnected fixture
- Maximum of 60 meters between each hop

Connectivity examples between the internet and Smart Fixtures:

Figure 1: JNET-2 Outdoor Bubble Examples



Installation

The installation procedure includes the following tasks:

1. Deploy LMS.
2. Prepare the cloud: create cloud project and extract GCP key and ucentral IP address
3. Stage the units, install GCP key in each fixture, ucentral IP in each CAP (or fixture acting as CAP) and LMS IP in each LMS GW
4. Set up the server configuration if applicable, based on the planned configuration
5. Install the outdoor CAPs (or wired connected fixtures) devices first according to the chosen connectivity option.
6. Install the smart fixtures according to the lighting plan that was prepared during the pre-installation stage.

Configuration/implementation

1. Lighting control

- Access to light control GW
- Set up and configure the LMS on the Juganu server.
- Customize the LMS configuration:
- Configure Light Profiles
- Set user roles and permissions

For more details, [see the LMS User Manual](#).

2. Fixtures Connectivity

- Validate that there is connectivity between the cloud, server (if applicable) and all fixtures and CAPs
- Ensure that the cameras embedded on the smart fixtures are capturing the required visual areas.

Verification

- Verify the fixtures are installed as planned.
- Verify video stream from each camera is established.
- Verify public WiFi is working.

Delivery

When the Smart lighting network is stabilized and performing optimally the network can be delivered to the customer. A training program is required for use of the Smart Outdoor Dashboard and the LMS.

Abbreviation

abbreviation	Definition	
CAP	Centralized Access Point	
JNET1	Juganu Network 1	Juganu Proprietary light network
JNET2	Juganu network 2	Juganu Proprietary wireless Ethernet network
Bubble	---	Cluster of JNET2 devices, CAP and/or luminaries sharing the same channel
GW	Gateway	Refers to lights control gateway
LMS	Light Management System	
VMS	Video Management System	
LPR	License Plate Recognition	
VM	Virtual Machine	
MP	Mega Pixel	Size of video stream
FPS	Frame Per second	Number of frame per second in video stream