Cisco Smart+Connected City Parking:
Helping Cities, Citizens, Local Businesses, and Enforcement Agencies

Introduction

Parking can be a challenging issue, especially in urban areas where 30 percent of all traffic congestion is caused by drivers circling to find a space. Add to that the amount of time wasted and the limited data available to guide motorists' decision making, and it's easy to see why they get frustrated. Cities are also losing out. Aside from the damaging environmental effects, they often lose revenue due to inadequate meter enforcement and no-parking, standing, and loading zone violations. Income for shops and local businesses is also heavily affected by the availability of parking.

The Solution

Cisco Smart+Connected™ City Parking addresses these issues through the introduction of sensors and video-enabled parking management. Smart+Connected City Parking provides citizens with real-time information about available parking. The end result is less traffic congestion and a more effective partnership between cities, citizens, local businesses, and parking enforcement agencies.

The solution makes this possible by:
- Combining IP cameras, sensors, smartphone apps, and the Cisco® Smart+Connected City Wi-Fi infrastructure to provide parking availability to citizens in real time
- Integrating with enforcement applications and pushing violation notices to traffic officers
- Providing greater visibility into parking analytics, such as usage and vacancy periods, so cities can make better informed decisions and long-term plans

Cisco, together with Streetline, offers the Smart+Connected Parking Solution. Using Streetline's Parker™ motorist guidance application, Guided Enforcement™ application, ParkSight™ analytics application and Streetline parking sensors, Cisco and Streetline deliver a solution which helps to reduce traffic congestion and improve city livability.

Solution Overview

Key characteristics and features enabled by the Cisco Smart+Connected City Parking solution include:

Parking Guidance
- View real-time parking availability, visually displayed on mobile devices or digital signage
- Search for parking spaces based on points of interest and personal preferences
- View parking rates and policy information in advance
- Receive voice guidance all the way to the parking space
- Make payment using a mobile app

Parking Enforcement
- Capture all parking events in metered and non-metered spaces
- Track payment and overstay violations using sensors and meter integration
- Monitor, report live, and enforce no-parking and loading zone violations using video analytics
- Deliver live snapshots of violations to mobile devices to aid enforcement officers

Administration
- Easily configure and manage sensors, video infrastructure, and policies/rules for parking violations
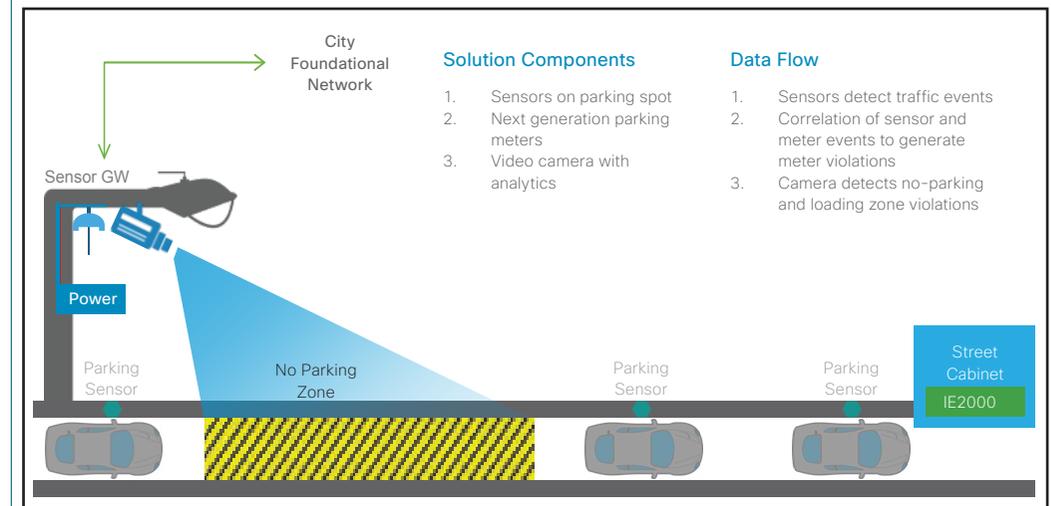
Analytics
- Report on parking occupancy, revenue, enforcement, etc.
- Provide detailed information such as time of day, day of week, etc., to assist with pricing decisions

How It Works

Intelligent parking services, accessed via the Cisco Smart+Connected City Wi-Fi infrastructure, are at the heart of the solution. Figure 1 shows how other technologies such as video and sensors combine to create an effective solution for parking issues.

Figure 1 Combining Video and Sensor Technology in Smart+Connected City Parking

City Foundational Network

Sensor GW

Power

Parking Sensor

No Parking Zone

Parking Sensor

Parking Sensor

Street Cabinet

IE2000

Solution Components
1. Sensors on parking spot
2. Next generation parking meters
3. Video camera with analytics

Data Flow
1. Sensors detect traffic events
2. Correlation of sensor and meter events to generate meter violations
3. Camera detects no-parking and loading zone violations

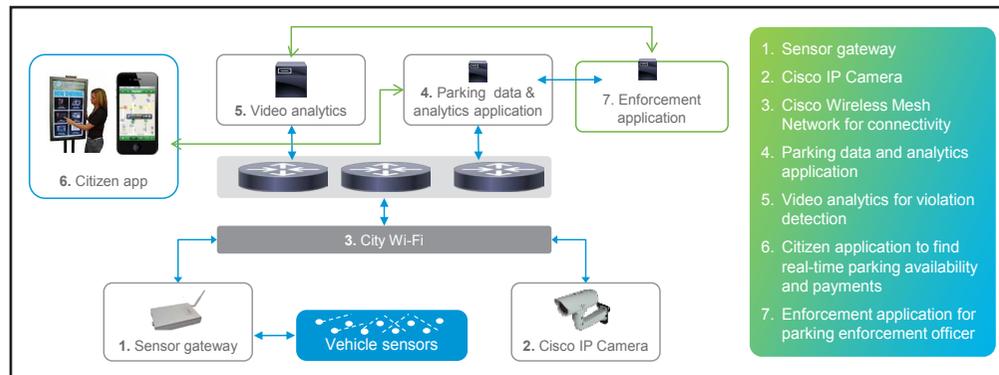1 Smart Parking and Connected Consumer Report, ITS America, 2012

Streetline sensors detect the real-time availability of parking spots, while also integrating with digital meters to identify meter violations. Video cameras enabled with analytics monitor parking spots and no-parking zones. The system can also track specific vehicle types and report on loading zone violations. Streetline's suite of applications for consumers, city officials, and enforcement officers ensure that the correct information is delivered, at the right time, to the right people for decisions.

Solution Architecture

Figure 2 shows how the various components of the Cisco Smart+Connected City Parking solution fit together.

Figure 2 Cisco Smart+Connected City Parking High Level Architecture

1. Sensor gateway
2. Cisco IP Camera
3. Cisco Wireless Mesh Network for connectivity
4. Parking data and analytics application
5. Video analytics for violation detection
6. Citizen application to find real-time parking availability and payments
7. Enforcement application for parking enforcement officer

Technical Components

A typical Cisco Smart+Connected City Parking solution comprises:

Cisco
- End-to-end network
- Video end point (camera)
- Video infrastructure and analytics
- Data center infrastructure
- Smart+Connected City Parking Software

Streetline
- Parking sensors
- Parking sensor gateway
- ParkSight™ – policy management application
- Guided Enforcement™ – application
- Parker™ by Streetline – citizen mobile guidance application

Benefits

City Benefits
- Improved traffic flow, less congestion, and better mobility and living conditions
- Additional revenue through increased capture rates and pricing changes powered by analytics
- Higher enforcement-officer productivity, ultimately leading to smarter policing with smaller workforce
- Increased success rate in parking ticket disputes
- Optimal environmental impact with lower carbon emissions
- Greater efficiency of traffic monitoring and improved planning, driving better return on investment and savings

Citizen Benefits
- Reduced circling, leading to savings in time and fuel
- Less overall congestion and general improvement in quality of life

Local Business Benefits
- Ease of parking, resulting in greater customer footfall
- Ability to generate targeted offers and promotions for citizens, based on parking data

Enforcement Officer Benefits
- Real-time visibility into parking violations
- Improved workforce management capabilities
- Improved results through better use of time and effort

Cisco Services

Cisco offers a wide range of support programs to accelerate customer success. These innovative programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction.

Why Streetline and Cisco?

Streetline, Inc. the leading provider of smart parking solutions to cities, garages, airports, universities and other private parking providers and Cisco, the worldwide leader in IT, together deliver a pre-integrated, validated Smart+Connected City Parking Solution. This solution helps to make smart cities a reality through the use of sensor-enabled mobile and web applications.

For More Information

For further information, contact your local Cisco account representative or authorized Cisco partner, or visit: www.cisco.com/go/smartconnectedcommunities.