AC 2100
Fingerprint Access Control Terminal

UNION COMMUNITY

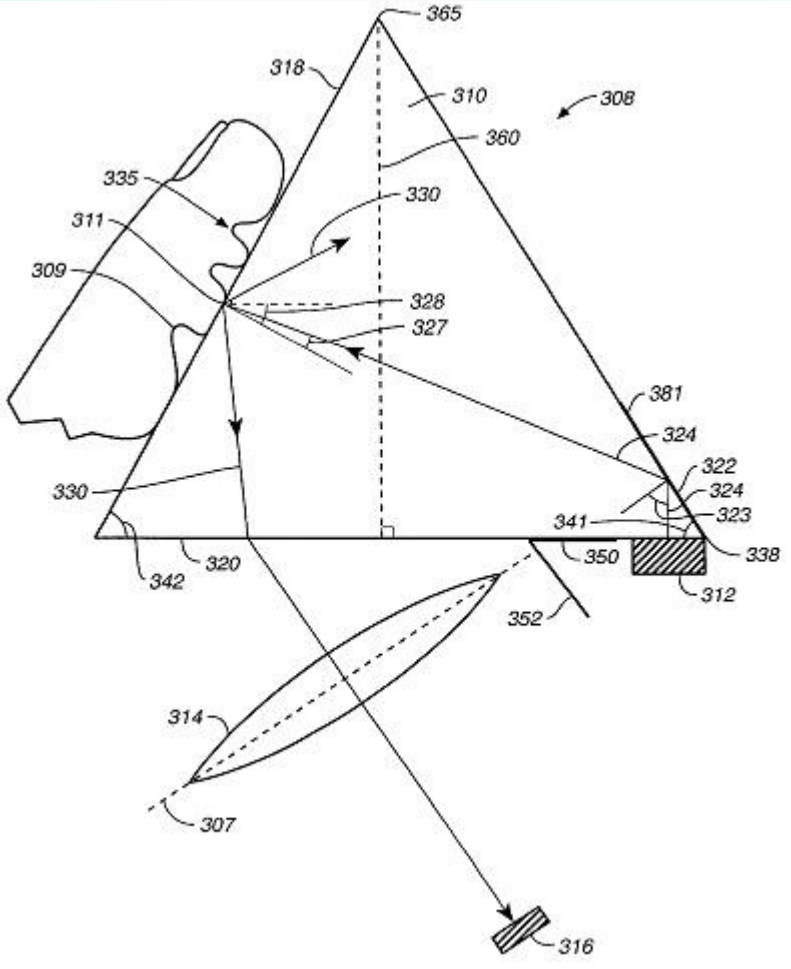
1. STRENGTH

- **Fast and Accurate Fingerprint Identification**
  - ✓ 1:2000 fingerprint identification in 1 second
- **Easy Installation and connectivity**
  - ✓ Network interface by TCP/IP or RS485 & RS232
  - ✓ Wiegand Input/Output interface
- **Easy operation and management**
  - ✓ Built in 4 button (← ↓ ↑ →) and RF/Smart card
  - ✓ Easy to use PC software for access control and time attendance
  - ✓ Template on card to store fingerprint data on a smart card

1. Convenient user registration (Server program with USB reader / AC2100 Terminal)
2. Network / Stand Alone Operational Mode
3. Easy data backup function for preventing data loss
4. User friendly system operation
5. Various authentication methods (Fingerprint, Card, Fingerprint & Card, etc.)

2. Product Excellence

2-1. Optical Sensor (US Patent No : US6,324,020) Patent



What is claimed is :

A compact apparatus for forming a high contrast, low distortion image of a patterned object including :

1. A light refractor for reflecting and refracting light, the light refractor including

1-1. an imaging surface against which a patterned object to be imaged is to be placed to form an apparent image of the patterned object in the light refractor;

1-2. a viewing surface adjacent to the imaging surface and through which an image of the object to be imaged is projected, the viewing surface forming an angle γ with the imaging surface ;

1-3. a further surface adjacent to the imaging surface

At least one lens adjacent to the viewing surface and for receiving and focusing and image of a patterned object projected through the viewing surface, the lens having a lens plane which is perpendicular to an optical axis of the lens, the lens plane forming an angle δ with the viewing surface

2. Product Excellence

SPTO 9/22/2008 4:03:28 PM PAGE 2/004 Fax Server

TO:NOEL C. GILLESPIE COMPANY:2001 ROSS AVENUE, SUITE 2300

UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

SEPTEMBER 22, 2008

PTAS

NOEL C. GILLESPIE
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DALLAS, TX 75201

UNITED STATES PATENT AND TRADEMARK OFFICE
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RECORDATION DATE: 09/22/2008 REEL/FRAME: 021561/0541
NUMBER OF PAGES: 2

BRIEF: LICENSE (SEE DOCUMENT FOR DETAILS).
DOCKET NUMBER: 95215968.2000001

ASSIGNOR:
SECUGEN CORPORATION DOC DATE: 09/09/2008

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SERIAL NUMBER: 09368442 FILING DATE: 08/04/1999
PATENT NUMBER: 6324020 ISSUE DATE: 11/27/2001
TITLE: METHOD AND APPARATUS FOR REDUCTION OF TRAPEZOIDAL DISTORTION AND IMPROVEMENT OF IMAGE SHARPNESS IN AN OPTICAL IMAGE CAPTURING SYSTEM

P.O. Box 1450, Alexandria, Virginia 22313-1450 - www.USPTO.gov

US006324020B1

(12) **United States Patent**
Teng et al.

(10) **Patent No.: US 6,324,020 B1**
(45) **Date of Patent: *Nov. 27, 2001**

(54) **METHOD AND APPARATUS FOR REDUCTION OF TRAPEZOIDAL DISTORTION AND IMPROVEMENT OF IMAGE SHARPNESS IN AN OPTICAL IMAGE CAPTURING SYSTEM**

(75) Inventors: **Harry H. Teng**, Stanford, CA (US); **Sung-Chan Jo**, Seoul (KR)

(73) Assignee: **SecuGen Corporation**, Milpitas, CA (US)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/368,442**

(22) Filed: **Aug. 4, 1999**

(51) **Int. Cl.**[7] **G02B 17/00**; G06K 9/00

(52) **U.S. Cl.** **359/726**; 359/737; 359/798; 359/831; 356/71; 382/127

(58) **Field of Search** 359/726, 737, 359/798, 831, 837; 356/71; 382/124–127, 116; 340/5.53, 5.83

(56) **References Cited**

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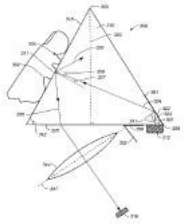
Primary Examiner—Evelyn A Lester
(74) *Attorney, Agent, or Firm*—Morrison & Foerster LLP

(57) **ABSTRACT**

An apparatus and method for acquiring an image of a patterned object such as a fingerprint including a light refracting device, a focusing lens, and a light source. The light refracting device can, for example, be a prism and includes an imaging surface, a light receiving surface and a viewing surface. Incident light from the light source is projected through the light receiving surface and reflected off a surface other than the imaging surface. This reflected light is then projected onto the imaging surface to create an image of the patterned object from substantially all scattered light through the viewing surface. The lens is placed adjacent to the viewing surface to focus the light on an image sensor. The apparatus is configured to reduce or substantially eliminate trapezoidal distortion and improve overall image sharpness in an image of an object created by the apparatus.

19 Claims, 7 Drawing Sheets



Licensed Regions : North/South America, EU, Japan and Korea

2-2. Powerful Live Fingerprint Detection

- Type of Fake Fingerprints


Paper


Paper (Coated)


Film


Silicon


Rubber


Gelatin

- Union Community's Core Detection Technology (Patent Protected)

Electrostatic capacity	**Distinguishing between live and fake fingerprint by using electrostatic capacity technology**
Optical characteristic	**Analyzing the image data achieved from a certain angle lighting to the fingerprint with infrared ray**
Algorithm	**Detecting position difference between live and fake fingerprints by algorithm analysis**

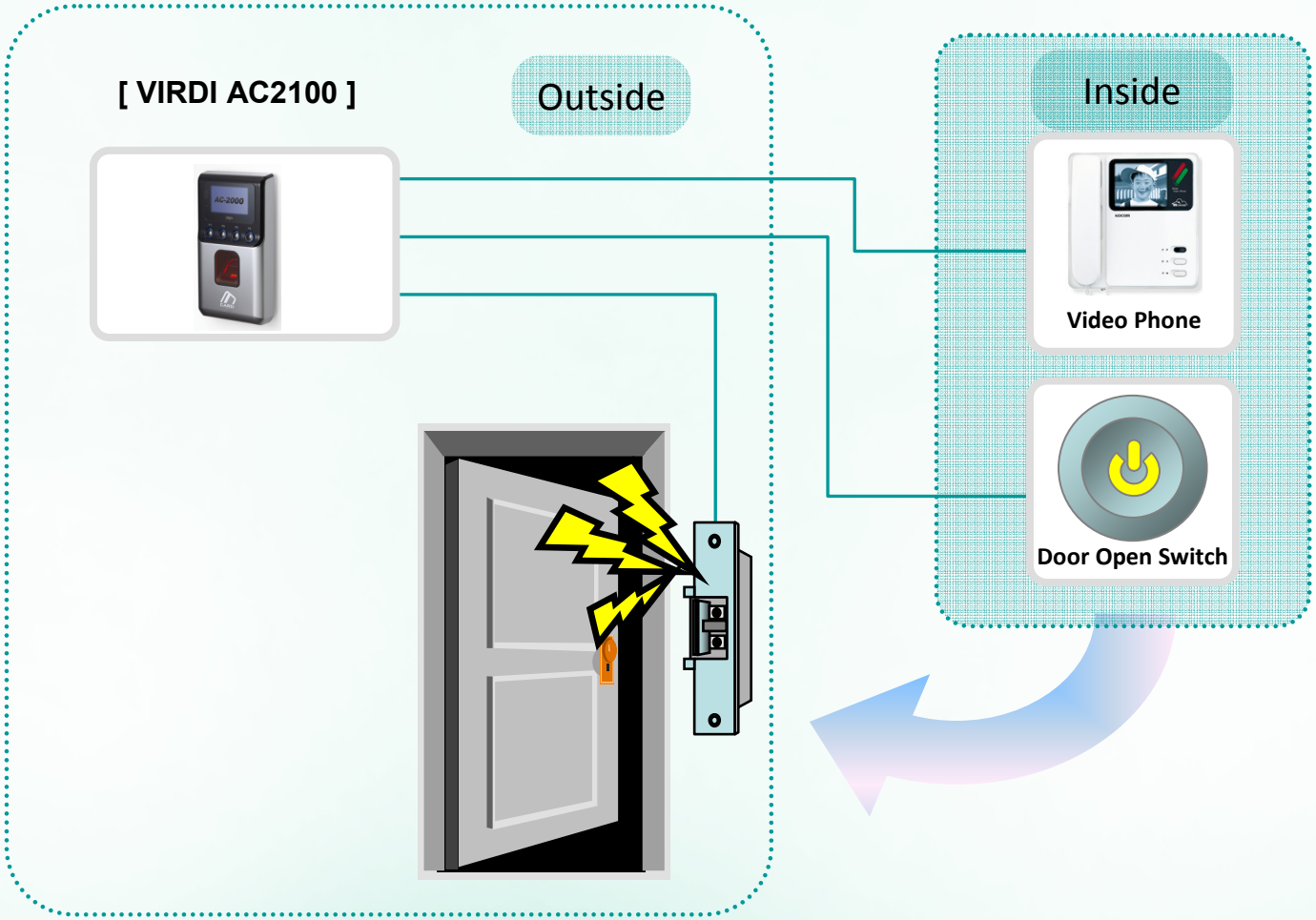
2. Product Excellence

2-2. Powerful Live Fingerprint Detection

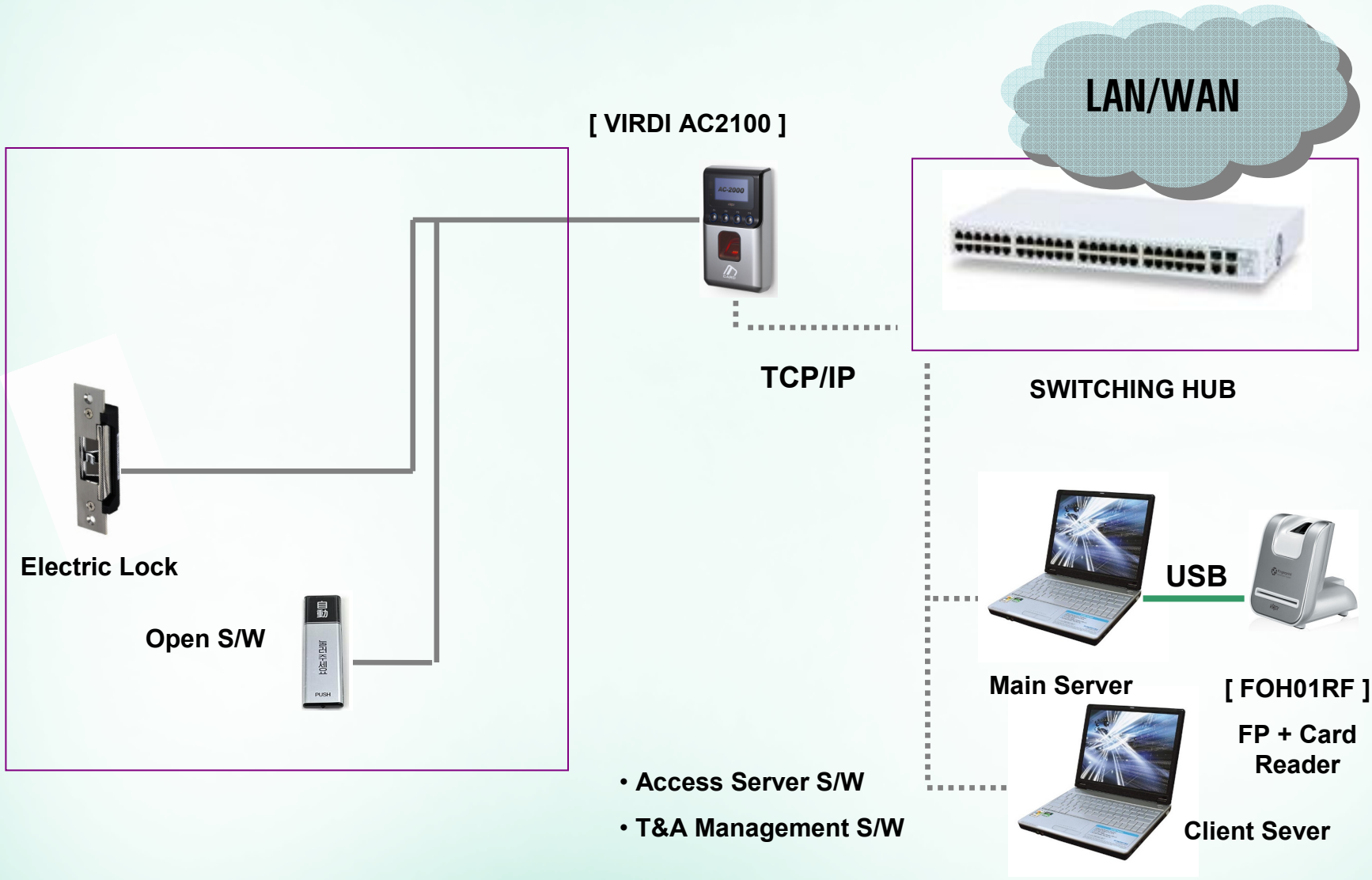
Along with the Presidential Commendation, Union Community won the Jang Young-sil Science and Culture Award, the highest award in the industrial technology in invention field in Korea on 18 Nov 2008.

The Jang Young-Sil Award is considered to be Korea's leading industrial technology award, and is jointly held by the Korea Industrial Technology Association and Maeil Business Newspaper, and sponsored by the Ministry of Science and Technology

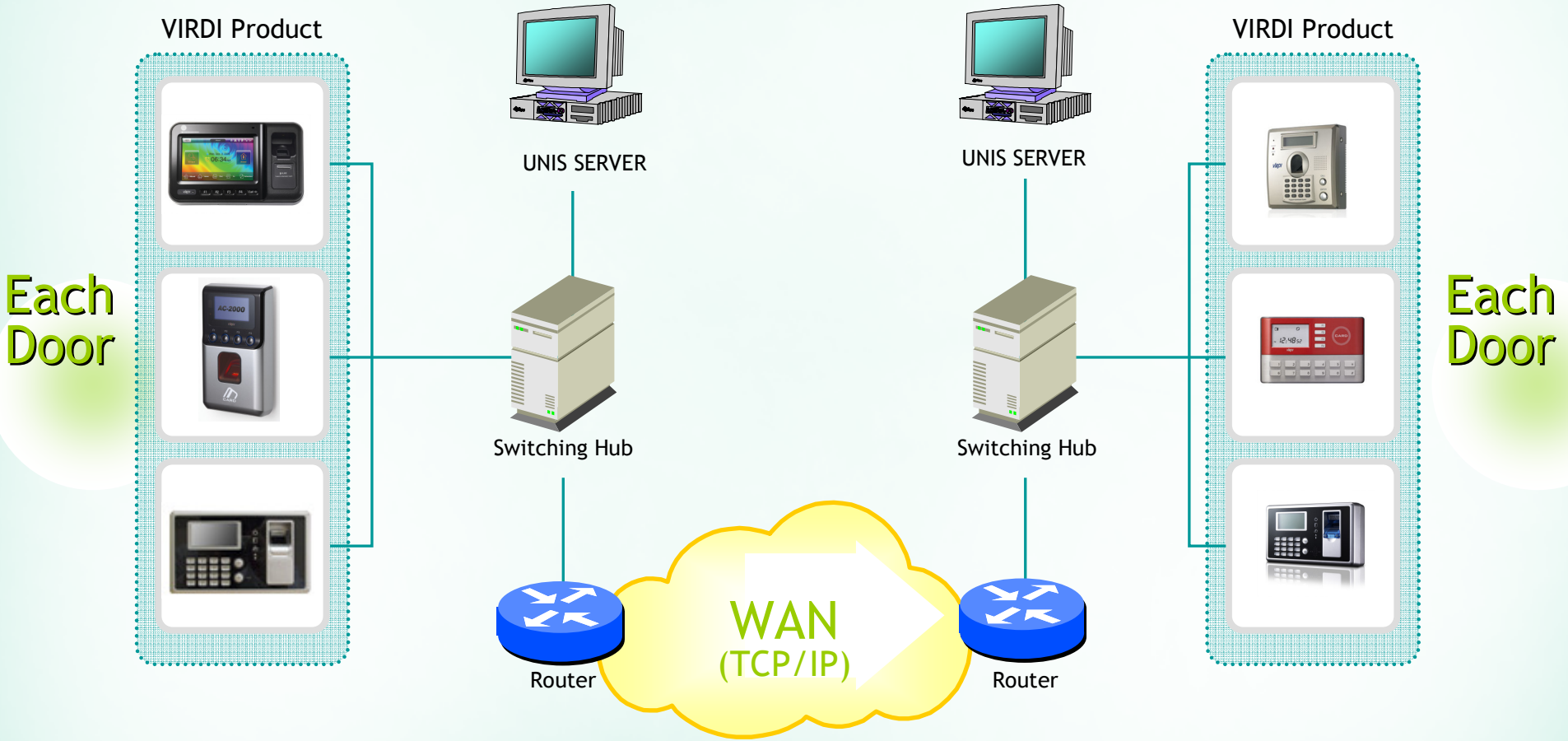
3. SYSTEM CONFIGURATION – Stand alone



3. SYSTEM CONFIGURATION – TCP/IP



3. SYSTEM CONFIGURATION – Network



4. AC 1000 SPECIFICATION

VIRDI AC2100

ITEM	AC2100
CPU	32bit Risc 266Mhz
Identification Speed	Less than 1 sec
Fake Finger Detection	Available
Log Capacity	5,000 events
Card	Mifare(13.56Mhz), EM(125Khz)
Authentication	Fingerprint/Card
Network Interface	TCP/IP, Wiegand In/Out, RS485, RS 232
LCD	128 x 64 Graphic LCD
Voice Message	Storing Flash (Server Download possible)
Keypad	F1~F4
Flash Memory	100 fingerprints(200 templates)
Lock Interface	1 OUT (Strike) 2 Monitor, 1 Exit
Anti-Pass back	Available
Size	93 x 170 x 40

5. World wide Clients

5. World wide Clients

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