

Proposal of Secure and Easy Remote Access Technology: SoftWire

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System Platforms Research Laboratories,
NEC Corporaton

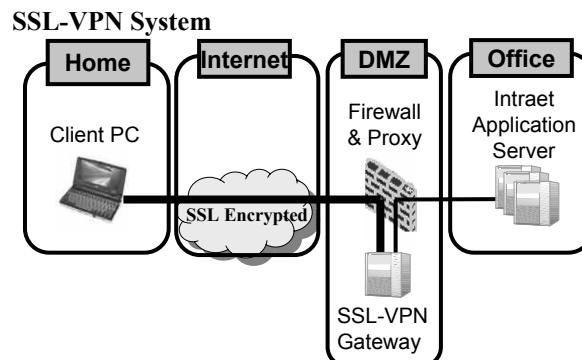
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Typical remote access approach – SSL-VPN

RAS via PSTN
(Remote Access Server) **Low Speed & High Cost**

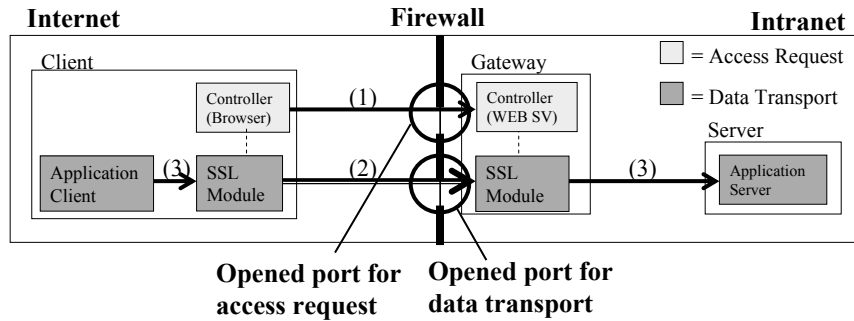
Changing

SSL-VPN via the Internet
(Secure Socket Layer - Virtual Private Network) **High Speed & Low Cost**



Problem of SSL-VPN

Detail of SSL-VPN System:



Problem of SSL-VPN:

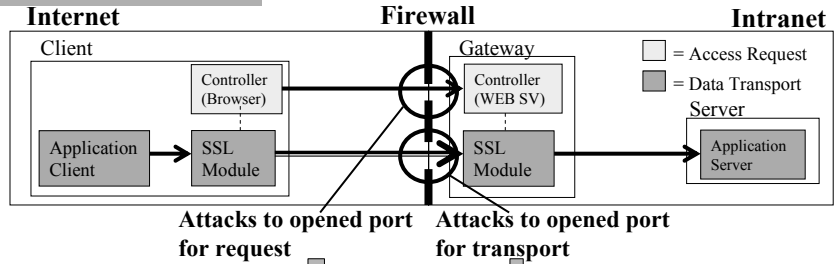
Opened ports → Cracking points (Security holes)

To avoid the problem:

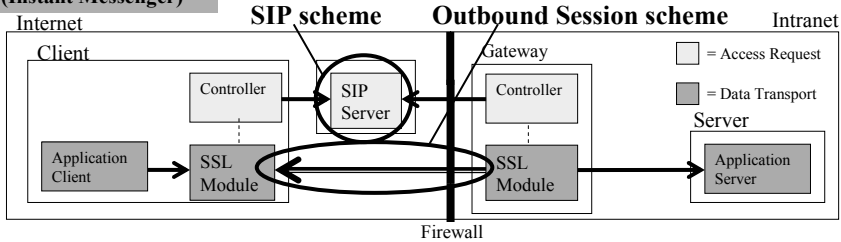
These ports basically should be closed, and open only for specific IP.

Current Approach

Problems of SSL-VPN



Current approach (Instant Messenger)



Current Approach (Access Request)

- SIP scheme -

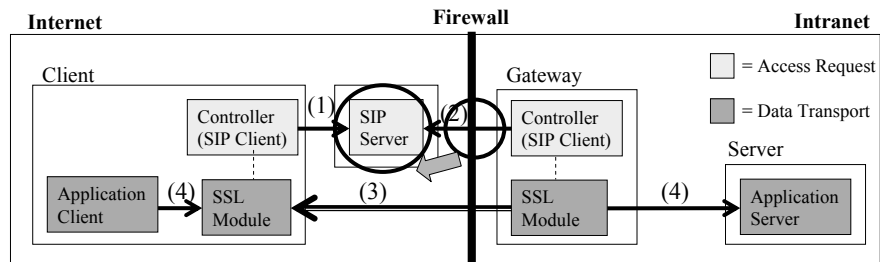
Working Procedure:

The gateway **in intranet** picks up requests from the SIP server **in internet**. This action is **from inside to outside** of the firewall.

- Enable the firewall to open access-request port only for specific IP.
- Avoid DoS attacks to the gateway

Causes administration problem:

Requires **additional server** on Internet.



Current Approach (Data Transport)

- Outbound session scheme -

Working Procedure:

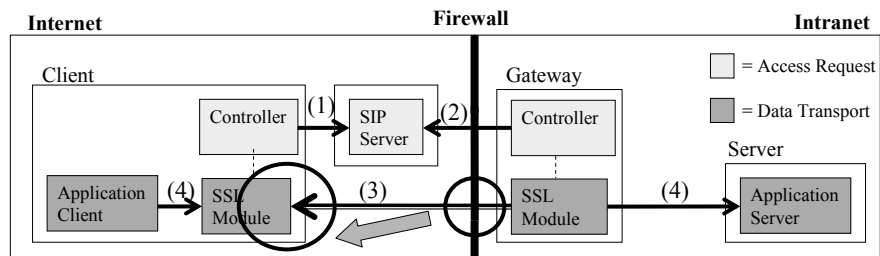
When a gateway receives an access request, the gateway creates SSL session. SSL session is created **from inside to outside** of the firewall.

- Enable the firewall to open data-transport ports only for specific IP.
- Avoid DoS attacks to the gateway

Causes security problem:

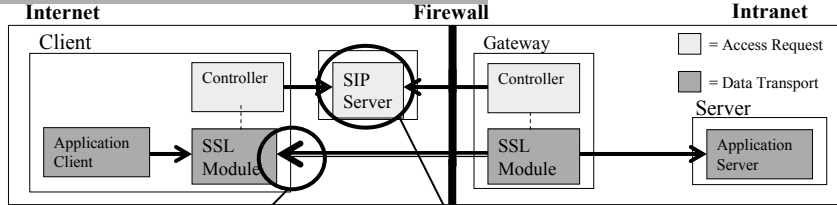
Requires **clients** to **always open** a data transport port.

⇒ Cracking points at clients



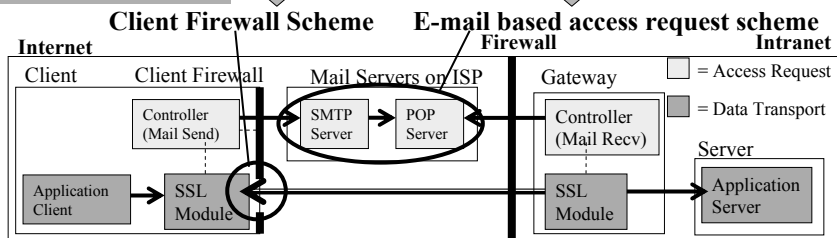
SoftWire Approach

Remaining Problems of current approach



DoS attacks to the client Additional server required

SoftWire approach



Client Firewall Scheme

E-mail based access request scheme

SoftWire (Access Request)

- E-mail based access request scheme -

Problem to be solved:

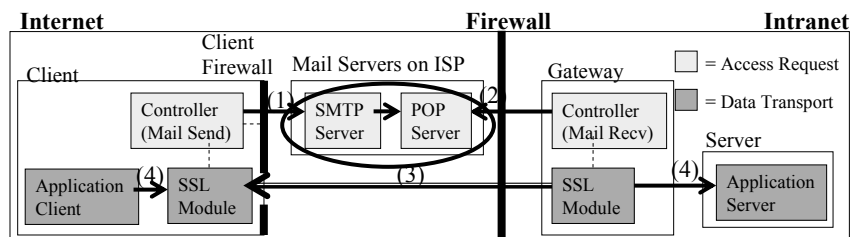
SIP server approach requires users to locate the SIP server on Internet. It is dis-administration.

SoftWire Approach:

SoftWire utilizes **existing** Mail servers as access request servers. (Mail servers are usually provided by ISPs.)

Result:

No additional servers required.



SoftWire (Data Transport)

- Client firewall scheme for outband session -

Problem to be solved:

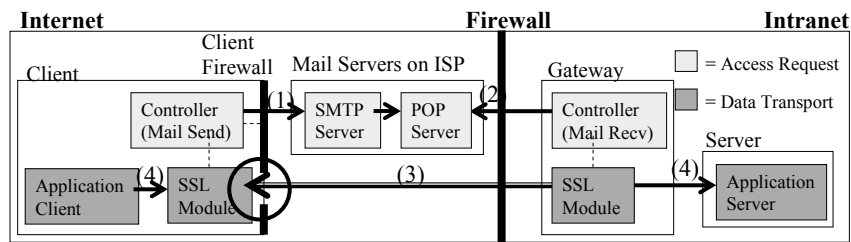
The client is required to open a port for accepting requests from the gateway. This feature may cause DoS attacks to the clients.

SoftWire Approach:

SoftWire adopts a firewall to the client. It accepts the requests **only for a short period** after a user sends an access request by E-mail.

Result:

Minimum risks of DoS attacks.



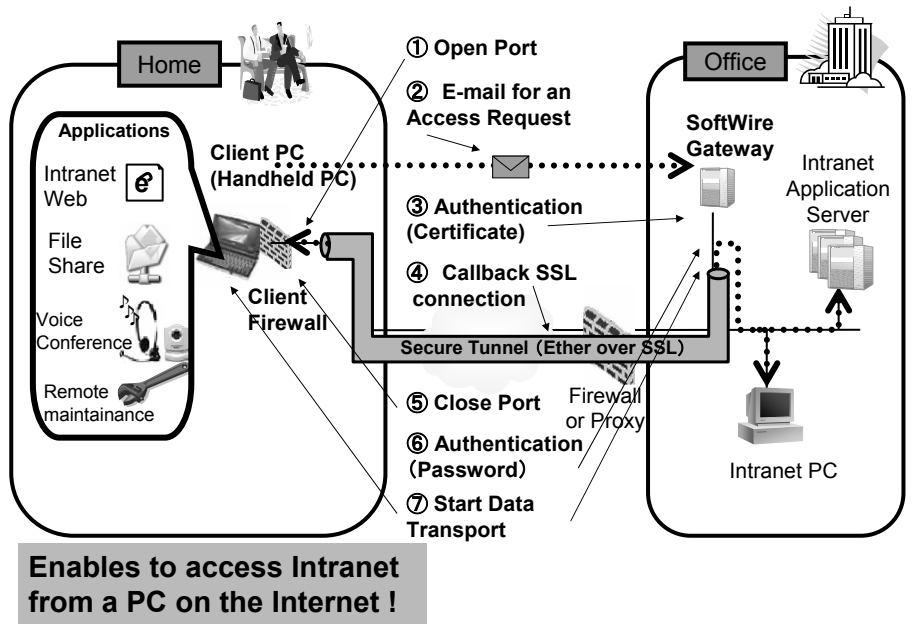
Comparison

		Access Request	Data Transport
SSL-VPN	Problem	× Attacks to firewall	× Attacks to firewall
Current approach (Instant Messenger)	Scheme	SIP	Outbound Session
	Result	○ Avoid attacks to firewall	○ Avoid attacks to firewall
SoftWire	Problem	× Additional server (SIP server) required	× Attacks to client
	Scheme	E-mail based access request	Client Firewall
	Result	○ No additional server required	○ Minimum risks of DoS attacks

↓
Easy to install

↓
Secure against attacks

SoftWire System Overview



Summary

SoftWire is a new secure and easy remote access technology,

Based on:

Outbound session scheme:

→ To avoid DoS attack to Gateway **Secure**

→ No manual configurations are required to firewalls. **Easy**

Client firewall scheme:

→ To avoid DoS attack to Client **Secure**

E-mail based access request:

→ No additional servers are required. **Easy**

→ No manual configurations are required to firewalls. **Easy**