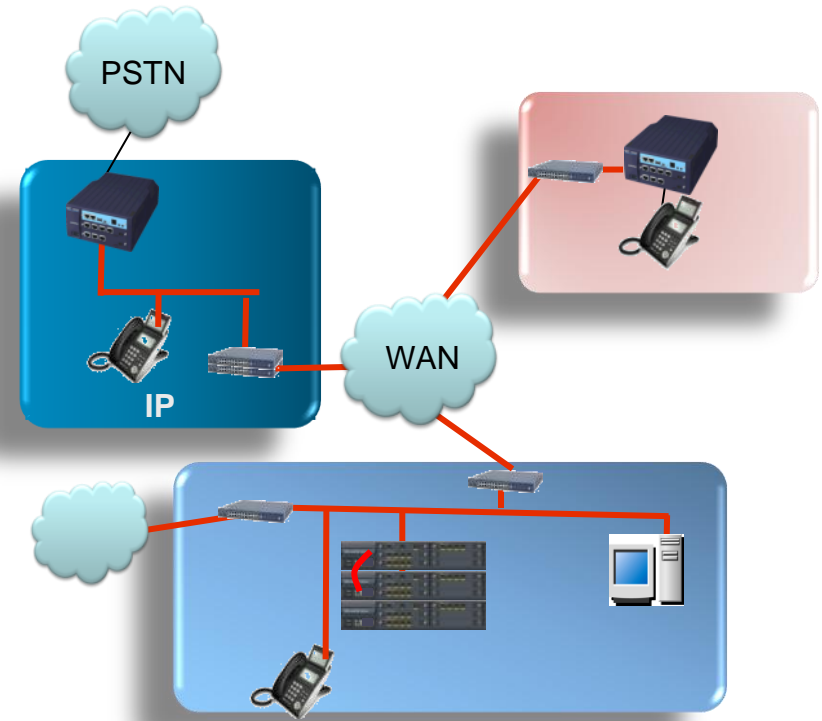# SV8100 – Networking

Pre-Sales Support

**UNIVERGE SV8100
Release 5**

Doc. Version 5.00

Agenda

IP Feature Networking

K-CCIS

NetLink

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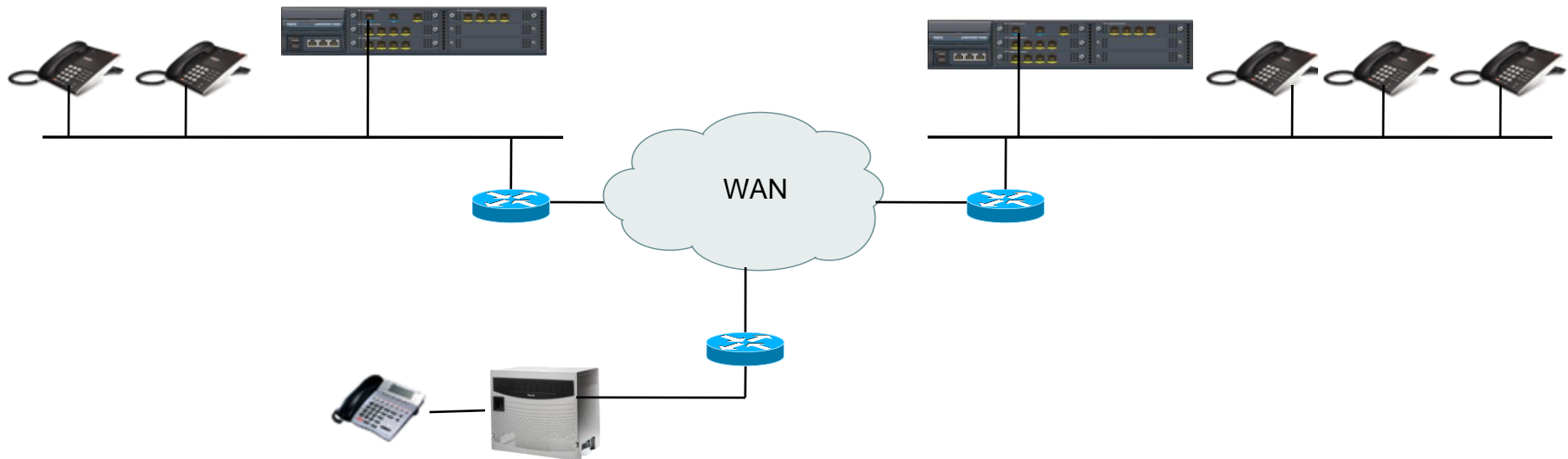
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IP Feature Networking

Connects SV8100, Aspire and IPC500

- Former names:
    - AspireNet   (NEC Infrontia Aspire) or
    - IPC500Net (NEC Philips IPC500)

General use:

- Add SV8100 to an existing network of legacy systems
- IP based and legacy terminals at multiple locations

WAN

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Boundaries

- Connect up to 16 systems together over an IP network:
  - NB See the "Configuration Guide SV8100" for network design constraints
  - When using more then 5 nodes, please contact CaSS Team for advice

- Single node systems or NetLink-networked systems

Constraints

- Connection via IP only
  - Media gateway (IPLA) in each node required

- No Peer-to-Peer between phones
  - IP phone on SV8100-1 calls IP phone on SV8100-2 =>
    - 2 DSPs at both SV8100s will be used

- Maximal # simultaneous calls determined by IPLA and codec type

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Features

Centralised voice mail   - Inmail,UM8000 (no IPC500 allowed in network)

Flexible network routing   - Select a Trunk in own or other node

Direct Dial In (DDI)   - Route DDI call to an extension in any node

Busy Lamp Indication   - Status of all extensions in the network

Network park hold   - Flexible park and pick up calls

Paging   - Paging calls to phones in network

Conference call   - talk with co-workers in any network node

NOT supported: - Centralised SMDR

                               - Centralised operator

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More features:

- Alternate route selection
- Barge in: call, conference
- Busy Lamp indication at DSS
- Call forwarding + DND override
- Call forwarding + Follow me
- Call forwarding: off-premise
- Caller ID display
- Follow me
- Camp on / Call waiting
- Department calling
- Department step call
- Direct Inward Line (DIL)

- Direct Inward System Access
- Hold
- Hotline
- Intercom
- Keep alive operation
- Last number redial
- Message Waiting
- Paging
- Ringdown (hotline), internal / external
- Selectable display messaging
- Toll restriction
- Transfer

- Every node should have IP Networking Channels licensed for IP feature Networking

- Every IP Networking Channel
uses 1 dsp (ipla) channel

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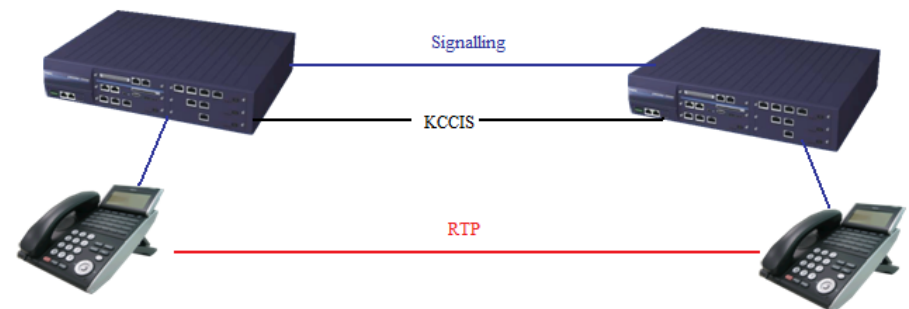
K-CCIS

Key-system **C**ommon **C**hannel **I**nteroffice **S**ignaling

- Proprietary, IP Based protocol

Features

- KCCIS - IP (point-to-multipoint) SV8100 to SV8100
- Peer-to-Peer between DT700 (from r4 on)
- Centralized VM

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Boundaries and Constraints

Boundaries

- Connects up to 16 systems together
- When using more then 5 nodes, please contact CaSS Team for advice
- NB See the "Configuration Guide SV8100" for network design constraints

Constraints

- No K-CCIS and Feature\Aspire Net on 1 node
- Peer-to-Peer
  - Between DT7XX only
  - Conference goes through switch
  - RTP Encryption not supported over the network (local it is)
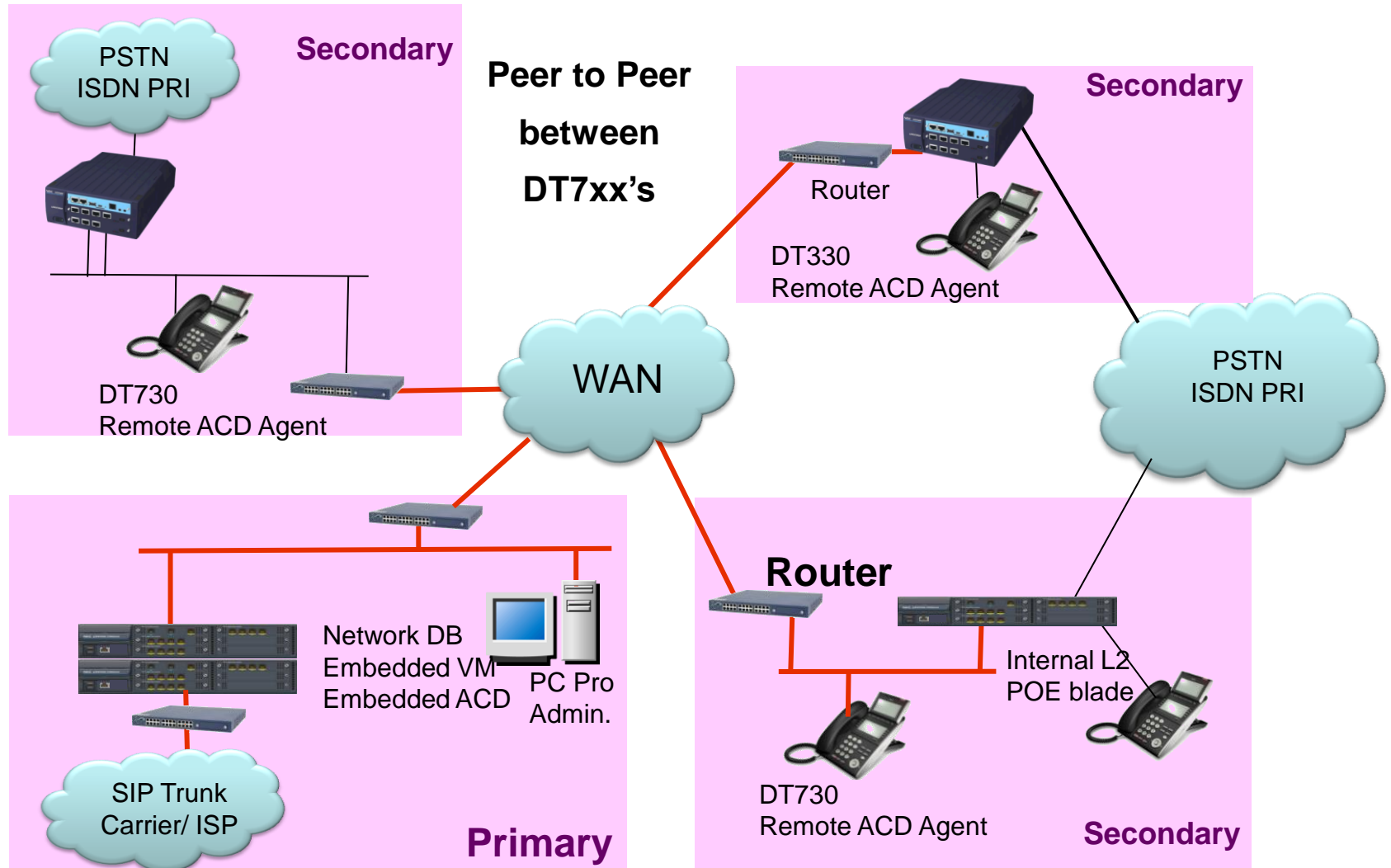 - NAT DT700 will Not follow

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Licenses:

▎ Every node should have IP Networking Channels licensed for IP K-CCIS

▎ Every IP Networking Channel
uses 1 dsp (ipla) channel

| | Extension Interfaces | Trunk Interfaces | Networking Interfaces | System Options |

Networking Interfaces

0	?	Analogue E&M Networking Channels
K-CCIS	?	IP Networking Protocol
8	?	IP Networking Channels
0	?	QSIG (E1) Networking Interfaces (30 Channels)

System Reports

System Reports

| Quote | Material Specification | Configuration Differences |

Qty	Prod.Code	Description
		SV8000 - iSPBX
1	9600 041 68000	UNIVERGE SV8100 R2 System DVD
1	BE106405	CH2U RACK MOUNT KIT
1	BE107322	PZ-ME50-EU
1	BE106911	PZ-32IPLA
1	BE108094	SV8100 Starter Package EU
		SV8000 - iSPBX Licences
1	BE107576	LK-SYS-SMDR-LIC
8	BE107583	LK-SYS-KCCIS-IP-LIC

NetLink

PSTN
ISDN PRI

Secondary

Peer to Peer

between

DT7xx's

Secondary

Router

DT330
Remote ACD Agent

DT730
Remote ACD Agent

WAN

PSTN
ISDN PRI

Network DB
Embedded VM
Embedded ACD

PC Pro
Admin.

Router

Internal L2
POE blade

SIP Trunk
Carrier/ ISP

DT730
Remote ACD Agent

Primary

Secondary

NetLink is Not just another Network protocol, but a way to create one

Single Distributed system

▎ Act as a **single distributed system** with a single database:

- Superior feature transparency

- Resources, features and applications can be transparently shared between main site and remote sites

- Centralized:
    - Voice Mail
    - Maintenance (PCPro)

Boundaries

Boundaries

- Up to **16** SV8100 nodes networked via IP
    - When using more then 5 nodes, please contact CaSS Team for advice
    - NB See the "Configuration Guide SV8100" for network design constraints

- Max 200 trunks and 512 TDM / IP phones across ALL nodes
  (like a single system)

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Example

All slots, trunks and ports belong to primary system:

- Boundaries & configuration rules of 1 SV8100 applicable for total network!
- Simple numbering plan and trunk routing
- All call control is done by the primary system

Main site

Slot 1	CD-CP00	Primary
Slot 2	16DLCA	Extension port 1 – 16
Slot 3	4DIOPA	Trunk port 1 – 4
Slot 4	2BRIA	Trunk port 5 – 12

Remote Office 1

Slot 1	CD-CP00	Secondary 2
Slot 2	16DLCA	Extensions port 41 – 56

Remote Office 2

Slot 1	CD-CP00	Secondary 1
Slot 2	16DLCA	Extensions port 17 – 32
Slot 3	4COTA	Extensions port 33 – 40
Slot 4	2BRIA	Trunk port 13 – 20

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Licenses

▌ Licenses for all Secondary systems are added to <u>Primary</u> system
- Also all licenses for local ACD agents and InMail users
- No licenses are added to secondary systems themselves

▌ For each Secondary system (cpu), NetLink license must be generated
Example: 1 Primary site with 2 Secondary's → 2 NetLink lics in primairy

▌ Primary system provides a replication (copy) of the configuration and licenses to Secondary systems

▌ When a Secondary system becomes Primary, licenses still works

Notes:

▌ License of secondary systems are temporary and lasts <u>7 days</u>

▌ After 7 days, the system will reset by itself and lose licenses

▌ If the link is recovered and the original primary system is back online, the systems can continue to work without an expiration date

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Function	Primary	Secondary
Analogue extension interfaces	Yes	Yes
Digital extension interfaces	Yes	Yes
IP extension interfaces	Yes	Yes
3rd party SIP extension interfaces	Yes	No
-48V analogue extension interfaces (long line)	Yes	Yes
ISDN S0 extension interfaces (2 channels	Yes	Yes
Analogue trunk channels	Yes	Yes
ISDN BRI and PRI channels	Yes	Yes
SIP (IP) trunk channels	Yes	No
Analogue E&M networking channels	Yes	Yes
IP networking protocol / channels	Yes	No
ACD agents	Yes	Yes
External application interfaces	Yes	No

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CCPU in each SV8100

PZ-ME50 memory enhancement in Every SV8100 node !

PZ-xIPLA voice gateway (32, 64 or 128 channels) in every SV8100 node

All systems must use the same main software version

Only 1 InMail voicemail can be active in a NetLink network
- Must be installed in the primary system

IP Applications

ALL Applications have to connected to Primary systems
Because it's not possible to specify external application interfaces at secondary

- Desktop Suite
- MyCalls
- BCT

IP phones etc. have to be registered to the Primary

- IP DECT,
- SIP Trunks
- IP phones
- From R4 on, DT7xx can register the Secondary

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After **fail-over** to Secondary

- Data in SRAM area is not transferred to secondary during fail-over so,

  - During fail-over the following might be lost:

    – DND, caller ID history,

    – Manual night mode settings,

    – VRS general messaging,

    – hotel / motel wake up call,

    – Secretary call buzzer

- IP DECT will re-register to the new Primary and continue operating

- IP Applications do not know the new primary IP address so, following will be disabled:

    – SMDR,

    – ACD-P-Event,

    – OAI,

    – CTI,

    – SIP trunks are disabled

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DSP Usage

- Next slide shows # of DSP's used on a particular SV8100 in a 3-system NetLink configuration

- Example:

			Secondary 1	
			Legacy	
Primary System	Legacy		P :1 S1 :1	

Communication between:
- Primary System (Legacy), and
- Secondary System 1 (Legacy)

- Uses:
- 1 DSP from Primary, and
- 1 DSP from Secondary 1

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DSP Usage

NetLink (# DSPs used)		Primary system					Secondary 1		Secondary 2	
		Legacy	IP ext. DT7x0 or 3th party SIP	CO Analog Digital Trunk	IP Trunk		Legacy	CO Analog Digital Trunk	Legacy	CO Analog Digital Trunk
Primary System	Legacy	0	P:1	0	P:1		P :1 S1 :1	P :1 S1 :1	P :1 S2 :1	P :1 S2 :1
	IP ext. DT700 or 3th party SIP	P:1	0	P:1	P:2		S1 :1	S1 :1	S2 :1	S2 :1
Secondary System 1	Legacy	P:1 S1:1	S1:1	P:1 S1:1	P :2 S1 :1		0	0	S1 :1 S2 :1	S1 :1 S2 :1
Secondary System 2	Legacy	P:1 S2:1	S2:1	P:1 S2:1	P :2 S2 :1		S1 :1 S2 :1	S1 :1 S2 :1	0	0

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Survivability

- One SV8100 acts as the primary
  - Maintains copy of configuration and database on secondary systems
  - Fail Over occurs when:
    - Primary is turned off or fails
    - Network communication lost between primary and secondary
- During fail-over a (predefined) secondary takes over
- Secondary will temporarily be the primary and control other SV8100s

<Stand alone>　　　**<Primary>**　　　**<Secondary>**

IP　　　IP

DT7xx has 4
Registration Destinations

TDM continues to
function

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Example 1

NetLink
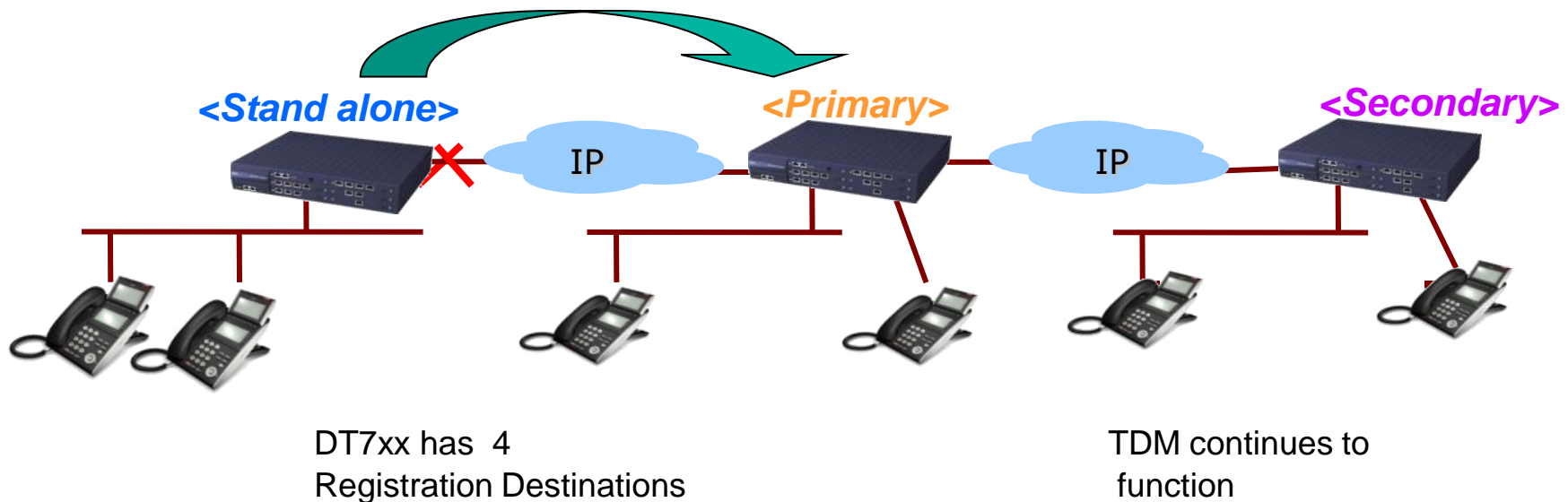
If the IP network inter-connecting the SV8100s fails:

- Remote SV8100 nodes can connect directly to PSTN
- Can continue calls (local PSTN connection required)

SV8100

IP

PSTN

All **Active** calls are disconnected (even peer to peer) because:

- All IP-related interface handling is concentrated on the primary (secondary site do not handle any IP locally)
- All SV8100s reboot so Call control is anyhow disconnected

Example 2

NetLink

If Primary NetLink node fails (power fail), consequences on Primary are:

- DT700, SIP phones, IP-DEC and SP310 softphones:
  - Re-register to new Primary (keep extension nr)

- DT300 and SLT:
  - Dead on primary, local on secondary

- Applications connected or located in primary node:
  - InMail dead
  - InACD will continue on remaining nodes
  - No fail over option in BCT, and MyCalls software

- Application interfaces:
  - Output will continue from new primary

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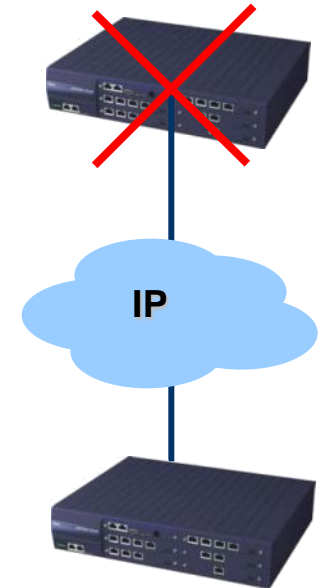
If the **Connection fails** to the primary NetLink node
eg local router down)

- DT700, SIP phones, IP-DECT and SP310 softphones:
  - Re-register to new Primary (keep extension nr)

- DT300 and SLT:
  - Continue on the system to which they are connected

- Applications connected or located in primary node:
  - Continue on the system to which they are connected

- Application interfaces:
  - Continue on the system to which they are connected

IP

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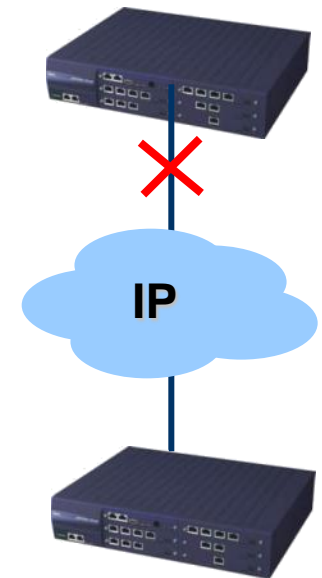
NetLink: Register Own Remote System

DT700 Terminal registers to own NetLinked system.

This reduce the network and system load at the Primary site.

NET LINK

Primary

Secondary

DT700 (IP)

DT700 (IP)

NET LINK

Primary

Secondary

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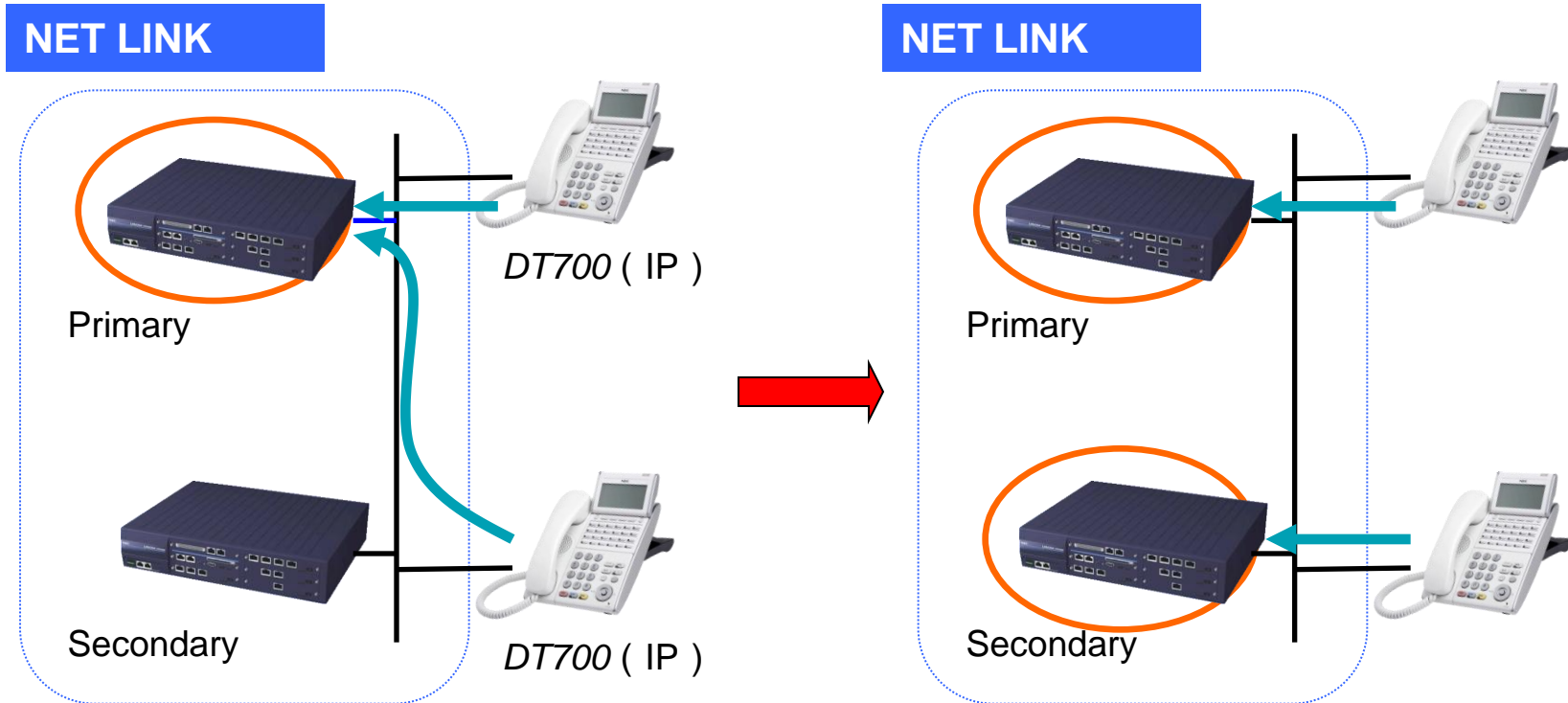
NetLink: Multi SIP Carriers support

- SV8100 R4 or lower supports one SIP carrier connection per system.
- R5 will support multi SIP carries with Netlink.
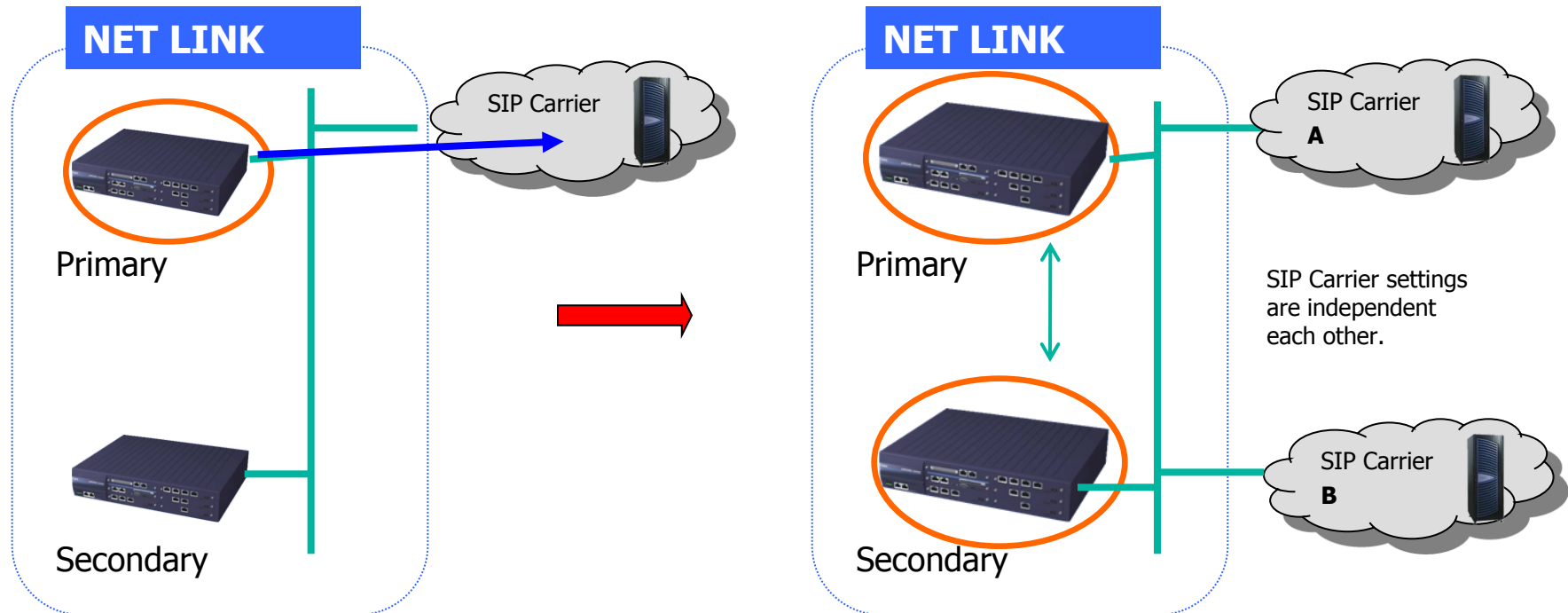
Requires: BE110867 LK-SYS-V5000 Enhancements-LIC

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Use of CD-ETIA (In-Skin 8 port Gigabit PoE Switch)

▌ It is recommended to use an external Ethernet switch for the Secondary systems.

▌ This is because when NetLink integrates the systems together it performs a slot reset on all Secondary systems.
This action can cause the NetLink connection to fail and recover in an endless loop due to the loss/recovery of the Ethernet link.

▌ There is no problem deploying the CD-ETIA blade in the Primary system or in any systems that do not use NetLink.

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- When network communication is cut down more often (in one hour) than the specified amount:
  - Failover
  - The Primary will work as stand alone
  - If needed, one of the Secondary nodes will work as new primary

- When the number of disturbances of the network communication doesn't reach the specified amount, the counter starts at 0 again

- Reconnect again
  - Reset or
  - Connect manually

The specified "max. number of disturbances " is 4.

1:00   2:00

1   2   3   1   2   3   4   Stand Alone

Down!!   Down!!   Down!!   D   Down!?   Down!!   Down!!

Prophix
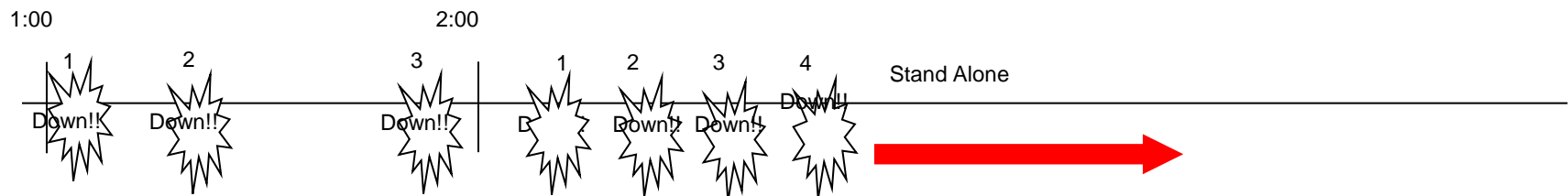
Example: How to configure NetLink with 3 nodes

- **System 1 (Primairy)**
  – Add SV8000 system
  – Select SV8100 platform
  – Select system type <u>Main</u>
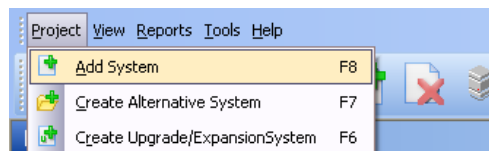
- **System 2 (Secondary)**
  – Add SV8000 system (F8)
  – Select SV8100 platform
  – Select system type <u>Remote</u>
  – Select System1 as main system

- **System 3 (Secondary)**
  – Add SV8000 system (F8)
  – Select SV8100 platform
  – Select system type <u>Remote</u>
  – Select System1 as main system

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System1:

- Main NetLink node
- 2 NetLink licenses

System2:

- Remote NetLink node
- Limited options

System3:

- Remote NetLink node
- Limited options

Note:

Max. 128 Channels

because of IPLA

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SV8100 Networking Summary

NetLink

Full Feature Transparency

Single Image
  One Common Database
  Network

Network of SV8100s

Capacity of Primary and Remotes Site limited to Single System Capacity

Up to 16 SV8100 systems in the network

K-CCIS

Peer 2 peer IP based

Selected Feature Set

Network of SV8100s

Up to 16 systems in the network

FeatureNet

High Feature Set

Network of Aspire/IPC 500 and SV8100s

Up to 16 systems in the network

SIP

Desk to Desk dial

Network of Aspire/IPC 500 and SV8100s and potentially more compatible systems

Up to 1000 systems in the network

Reduced Communications Expense
Reduced Cost of Ownership
Improved Employee Communication

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