

SUPPORTING 3-2-4 TELEPHONE NETWORK EXPANSION



S3-2-4-1

Local Network Traffic Matrix (erl)



S3-2-4-1 Local Network Traffic Matrix(ert)

Table with 45 columns and 75 rows. Columns include Source, Dest, Area, Subarea, Zone, Node, and various traffic metrics. The table contains dense numerical data for each of the 75 rows.

Table with columns labeled by numbers 1 through 56. Each row contains numerical data for these columns. The table is extremely dense, spanning most of the page. The columns are numbered 1-56. The data consists of various decimal values for each row.



S3-2-4-2

Result of Long Distance Traffic Calculation





S3-2-4-3

TS Traffic Matrix in Damascus Area



S3-2-4-3 TS Traffic Matrix in Damascus Area

(Unit : Erlang)

Toll Switch	Damas. STD	Al Nabek	Zabadani	Quennetra	Darra	Sweda	Other STD	INTL	MSC	Total
Damas. STD	-	258.23	111.38	15.67	197.77	123.58	-	-	-	706.62
Al Nabek	251.57	-	4.18	0.64	10.60	6.76	104.93	34.43	28.72	441.85
Zabadani	108.48	4.18	-	0.21	2.52	1.45	13.85	11.88	9.86	152.44
Quennetra	15.30	0.64	0.21	-	1.33	0.57	3.23	4.26	9.46	35.01
Darra	193.08	10.62	2.53	1.33	-	22.23	59.64	68.88	26.81	385.13
Sweda	120.82	6.79	1.46	0.57	22.26	-	35.49	45.88	23.65	256.92
Other STD	-	104.93	13.85	3.23	59.64	35.49	-	-	-	217.14
INTL	-	34.43	11.88	4.26	68.88	45.88	-	-	-	165.33
MSC	-	67.02	23.02	22.08	62.55	55.19	-	-	-	229.86
Total	689.25	486.84	168.51	48.00	425.56	291.16	217.14	165.33	98.50	2,590.28



S3-2-4-4

Traffic Matrix Among STDs in Syria



S3-2-4-4 Traffic Matrix Among STDs in Syria

(Unit : Erlang)

STD	Damascus	Aleppo	Homs	Hama	Lattakia	INTL	MSC	Total
Damascus	-	1,559.91	461.01	228.73	402.21	988.26	394.21	4,034.32
Aleppo	1,558.65	-	288.02	250.51	388.44	512.00	141.91	3,139.53
Homs	460.76	288.10	-	96.24	64.90	233.85	55.19	1,199.03
Hama	228.64	250.62	96.25	-	51.49	149.74	39.42	816.17
Lattakia	402.07	388.61	64.91	51.49	-	245.04	157.68	1,309.81
INTL	988.26	512.00	233.85	149.74	245.04	-	8.00	2,136.89
MSC	919.82	331.13	128.77	91.98	367.92	18.60	-	1,858.22
Total	4,558.20	3,330.36	1,272.82	868.68	1,520.00	2,147.49	796.41	14,493.97



S3-2-4-5

Result of Long Distance Traffic Calculation



S3-2-4-5 Result of Long Distance Traffic Calculation

(ert)

Office Name	National		International		Mobile		Long Distance		Total	
	CG-TRF	IC-TRF	CG-TRF	IC-TRF	OG-TRF	IC-TRF	OG-TRF	IC-TRF	STD 1	STD 2
Al Nabeek	378.68	385.39	764.07	34.43	68.86	28.72	441.83	486.34	926.67	464.34
Zahdani	130.69	133.61	264.30	11.88	23.76	9.86	152.43	168.51	320.94	160.47
Queensra	21.28	21.65	42.93	4.26	8.52	9.46	35.00	47.99	82.99	41.50
Darra	289.43	294.12	583.55	68.88	137.76	26.81	89.36	425.55	810.67	405.34
Sweda	187.39	190.08	377.47	45.88	91.76	23.65	256.92	291.15	548.07	274.04
Total	1,007.47	1,024.85	2,032.12	165.33	330.66	98.50	1,271.30	1,420.04	2,691.34	1,345.67



S3-2-4-6

Result of Long Distance Traffic Calculation



S3-2-4-6 Result of Long Distance Traffic Calculation

(ert)

Office Name	National			Mobile			Long Distance			Total	
	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	STD 1	STD 2
Aleppo	1,558.65	1,559.91	3,118.56	141.91	331.13	473.04	1,700.56	1,891.04	3,591.60	1,795.80	1,795.80
Homs	460.76	461.01	921.77	55.19	128.77	183.96	515.95	589.78	1,105.73	552.87	552.87
Hama	228.64	228.73	457.37	39.42	91.98	131.40	268.06	320.71	588.77	294.39	294.39
Latakia	402.07	402.21	804.28	157.68	367.92	525.60	559.75	770.13	1,329.88	664.94	664.94
Total	2,650.12	2,651.86	5,301.98	394.20	919.80	1,314.00	3,044.32	3,571.66	6,615.98	3,307.99	3,307.99



S3-2-4-7

Result of Mobile Traffic Calculation



S3-2-4-7 Result of Mobile Traffic Calculation

(ert)

Office Name	Mobile			
	OG-TRF	IC-TRF	Total-TRF	STD's TRF
STD 1	197.11	459.91	657.02	1,327.32
STD 2	197.11	459.91	657.02	1,327.32
Aleppo	141.91	331.13	473.04	
Homs	55.19	128.77	183.96	
Hama	39.42	91.98	131.40	
Latakia	157.68	367.92	525.60	
INTS	8.00	18.60	26.60	
Total	788.41	1,839.62	2,654.63	2,654.63



S3-2-4-8

Result of International Traffic Calculation



S3-2-4-8 Result of International Traffic Calculation

(erl)

Office Name	International			Total		
	OG-TRF	IC-TRF	Total-TRF	INTS(DAMAS)	INTS(Aleppo)	
STD 1	494.13	494.13	988.26	592.96	395.30	
STD 2	494.13	494.13	988.26	592.96	395.30	
Aleppo	512.00	512.00	1,024.00	614.40	409.60	
Homs	233.85	233.85	467.70	280.62	187.08	
Hama	149.74	149.74	299.48	179.69	119.79	
Lattakia	245.04	245.04	490.08	294.05	196.03	
Total	2,128.89	2,128.89	4,257.78	2,554.67	1,703.11	



S3-2-4-9

Local Network Circuit Matrix (Number of Circuits)



S3-2-4-10

Result of Long Distance Circuit Calculation



S3-2-10 Result of Long Distance Circuit calculation(Number of Circuits)

Area Name	Office Name	Number of SMDI	Circuits (Number of Circuits)			Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)	Circuits (Number of Circuits)						
			SDI	SDI	SDI																					
Alaska				
Alaska			
Alaska		
Alaska	
Alaska



S3-2-4-11

Result of Long Distance Circuit Calculation



S3-2-4-11 Result of Long Distance Circuit Calculation

(cont)

Office Name	National			International			Mobile			Long Distance			Total			Number of Circuits		
	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	STD 1	STD 2	STD Total
Al-NONCA	378.68	385.09	764.07	34.43	34.43	68.86	28.72	67.02	95.74	441.83	486.34	928.67	464.34	464.34	928.67	510	510	1,020
Zafadaru	130.69	133.61	264.30	11.88	11.88	23.76	9.86	23.02	32.88	152.43	168.51	320.94	160.47	160.47	320.94	210	210	420
Qacmra	21.28	21.65	42.93	4.26	4.26	8.52	9.46	22.08	31.54	35.00	47.99	42.99	41.50	41.50	84.49	60	60	120
Darra	289.43	294.12	583.55	68.38	68.38	137.76	26.81	62.53	89.36	385.12	425.55	810.67	405.34	405.34	810.67	450	450	900
Sweidu	187.39	190.08	377.47	45.88	45.88	91.76	23.65	55.19	78.84	256.92	291.15	548.07	274.04	274.04	548.07	300	300	600
Total	1,007.47	1,024.85	2,032.32	165.33	165.33	330.66	98.50	229.36	328.36	1,271.30	1,420.04	2,691.34	1,345.67	1,345.67	5,350	5,350	10,700	



S3-2-4-12

Result of Long Distance Circuit Calculation



S3-2-4-12 Result of Long Distance Circuit Calculation

(cti)

Office Name	National			Mobile			Long Distance			Total			Number of Circuits		
	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	OG-TRF	IC-TRF	Total-TRF	STD 1	STD 2	Total	STD 1	STD 2	STD(Total)
Alippo	1,558.65	1,559.91	3,118.56	141.91	31.13	473.04	1,700.56	1,891.04	3,591.60	1,795.80	1,795.80	3,591.60	1,830	1,830	3,660
Homs	460.76	461.01	921.77	55.19	128.77	183.96	515.95	589.78	1,105.73	552.87	552.87	1,105.73	600	600	1,200
Hama	228.64	228.73	457.37	39.42	91.98	131.40	268.06	320.71	588.77	294.39	294.39	588.77	330	330	660
Lattakia	402.07	402.21	804.28	157.68	367.92	525.60	599.75	770.13	1,329.88	664.94	664.94	1,329.88	720	720	1,440
Total	2,650.12	2,651.86	5,301.98	394.20	919.80	1,314.00	3,044.32	3,571.66	6,615.98	3,307.99	3,307.99	6,615.98	3,480	3,480	6,960



S3-2-4-13

Result of Mobile Circuit Calculation



S3-2-4-13 Result of Mobile Circuit Calculation

(erl)

Office Name	Mobile					No. of Circuits
	OG-TRF	IC-TRF	Total-TRF	STD's TRF	MSC	
STD 1	197.11	459.91	657.02	1,327.32	1,380	
STD 2	197.11	459.91	657.02	1,327.32	1,380	
Aleppo	141.91	331.13	473.04			
Homs	55.19	128.77	183.96			
Hama	39.42	91.98	131.40			
Lattakia	157.68	367.92	525.60			
INTS	8.00	18.60	26.60			
Total	788.41	1,839.62	2,654.63	2,654.63	2,760	



S3-2-4-14

Result of International Circuit Calculation



S3-2-4-14 Result of International Circuit Calculation

(crl)

Office Name	International			Total			Number of Circuits			
	OG-TRF	IC-TRF	Total-TRF	INTS(DAMAS)	INTS(Aleppo)	INTS(DAMAS)	INTS(Aleppo)	INTS(DAMAS)	INTS(Aleppo)	INTS(Total)
STD 1	494.13	494.13	988.26	592.96	395.30	630	450	630	450	1,080
STD 2	494.13	494.13	988.26	592.96	395.30	630	450	630	450	1,080
Aleppo	512.00	512.00	1,024.00	614.40	409.60	660	450	660	450	1,110
Homs	233.85	233.85	467.70	280.62	187.08	330	210	330	210	540
Hama	149.74	149.74	299.48	179.69	119.79	210	150	210	150	360
Latakia	245.04	245.04	490.08	294.05	196.03	330	240	330	240	570
Total	2,128.89	2,128.89	4,257.78	2,554.67	1,703.11	2,790	1,950	2,790	1,950	4,740

SUPPORTING 3-2-5 MOBILE TELEPHONE SYSTEM

S3-2-5-1

Radio Frequency Budget Calculation



S3 - 2 - 5 - 1 Radio frequency budget calculation

1) Cell Radius 1.5 km for Urban Area (3-sectored)

Item	unit	Downlink	Uplink	
Transmit Frequency	MHz	942.5	897.5	
Transmit Output Power (BTS, MS)	W	1	0.8	
	dBm	30.0	29.0	
Transmit Antenna Gain	dBi	17.1	-3.0	120 deg
Antenna Beam Width	deg	120	360	
TX Feeder Length	m	50.0	0	40] Antenna Height (m)
TX Feeder Loss(Lft)(IS-84-20D)	dB	2.5	0	0.05] Cable loss/m (IV-20D)
Combiner, Filter, Connector Loss	dB	4.8	0	
Correction by Downbeam Tilt	dB	0	0	
TX Sub total	dB	39.8	26.0	
BTS Antenna Height	m	40	40	40 Ground elev. from MS (m)
MS Antenna Height	m	1.5	1.5	
BTS Service Radius	km	1.5	1.5	1.5] BTS Service Radius (km)
Propagation Loss	dB	131.3	130.7	Urban/Large city
Receive Antenna Gain	dBi	-3.0	17.1	
RX Feeder length	m	0	50.0	40 Antenna Height (m)
RX feeder Loss(Lfr)	dB	0	2.5	0.05 Cable loss/m (IV-20D)
CNR Margin	dB	8.0	8.0	
Combiner, Filter, Connector Loss	dB	0	4.8	
RX Sub total	dB	-142.3	-128.9	
RX Input Level	dBm	-102.5	-102.9	
Required RX Input Level	dBm	-102.0	-104.0	

2) Cell Radius 3 km for Suburban Area (3-sectored)

Item	unit	Downlink	Uplink	
Transmit Frequency	MHz	942.5	897.5	
Transmit Output Power (BTS, MS)	W	3	0.8	
	dBm	34.8	29.0	
Transmit Antenna Gain	dBi	17.1	-3.0	
Antenna Beam Width	deg	120	360	
TX Feeder Length	m	50.0	0	40] Antenna Height (m)
TX Feeder Loss(Lft)(IS-84-20D)	dB	2.5	0	0.05] Cable loss/m (IV-20D)
Combiner, Filter, Connector Loss	dB	4.8	0	
Correction by Downbeam Tilt	dB	0	0	
TX Sub total	dB	44.6	26.0	
BTS Antenna Height	m	40	40	40 Ground elev. from MS (m)
MS Antenna Height	m	1.5	1.5	
BTS Service Radius	km	3.0	3.0	3] BTS Service Radius (km)
Propagation Loss	dB	131.6	131.1	Suburban
Receive Antenna Gain	dBi	-3.0	17.1	
RX Feeder length	m	0	50.0	40 Antenna Height (m)
RX feeder Loss(Lfr)	dB	0	2.5	0.05 Cable loss/m (IV-20D)
CNR Margin	dB	8.0	8.0	
Combiner, Filter, Connector Loss	dB	0	4.8	
RX Sub total	dB	-142.6	-129.3	
RX Input Level	dBm	-98.0	-103.3	
Required RX Input Level	dBm	-102.0	-104.0	

S3 - 2 - 5 - 1 Radio frequency budget calculation

3) Cell Radius 12 km for Quasi-Open Area (3-sectored)

Item	unit	Downlink	Uplink	
Transmit Frequency	MHz	942.5	897.5	
Transmit Output Power (BTS, MS)	W	2	2	
	dBm	33.0	33.0	
Transmit Antenna Gain	dB _i	17.1	2.0	
Antenna Beam Width	deg	120	360	
TX Feeder Length	m	60.0	4.0	50] Antenna Height (m)
TX Feeder Loss(Lft)	dB	3.0	3.6	0.05] Cable loss/m (1V-20D)
Combiner, Filter, Connector Loss	dB	4.8	0	0.9] Cable loss (MS)
Correction by Downbeam Tilt	dB	0	0	
TX Sub total	dB	42.3	31.4	
BTS Antenna Height	m	50	50	50] Ground elev. from MS (m)
MS Antenna Height	m	1.5	1.5	
BTS Service Radius	km	12.0	12.0	12] BTS Service Radius (km)
Propagation Loss	dB	136.6	136.3	Quasi-Open
Receive Antenna Gain	dB _i	2.0	17.1	
RX Feeder length	m	4.0	60.0	50] Antenna Height (m)
RX feeder Loss(L.fr)	dB	3.6	3.0	0.05] Cable loss/m (1V-20D)
CNR Margin	dB	5.0	5.0	0] Cable loss (MS)
Combiner, Filter, Connector Loss	dB	0	4.8	
RX Sub total	dB	-143.2	-132.0	
RX Input Level	dBm	-100.9	-100.6	
Required RX Input Level	dBm	-104.0	-104.0	

4) Cell Radius 24 km for Quasi-Open Area (3-sectored)

Item	unit	Downlink	Uplink	
Transmit Frequency	MHz	942.5	897.5	
Transmit Output Power (BTS, MS)	W	5	5	
	dBm	37.0	37.0	
Transmit Antenna Gain	dB _i	17.1	2.0	
Antenna Beam Width	deg	120	360	
TX Feeder Length	m	60.0	4.0	50] Antenna Height (m)
TX Feeder Loss(Lft)	dB	3.0	3.6	0.05] Cable loss/m (1V-20D)
Combiner, Filter, Connector Loss	dB	4.8	0	0.9] Cable loss (MS)
Correction by Downbeam Tilt	dB	0	0	
TX Sub total	dB	46.3	35.4	
BTS Antenna Height	m	70	70	70] Ground elev. from MS (m)
MS Antenna Height	m	1.5	1.5	
BTS Service Radius	km	24.0	24.0	24] BTS Service Radius (km)
Propagation Loss	dB	143.4	143.1	Quasi-Open
Receive Antenna Gain	dB _i	2.0	17.1	
RX Feeder length	m	4.0	60.0	50] Antenna Height (m)
RX feeder Loss(L.fr)	dB	3.6	3.0	0.05] Cable loss/m (1V-20D)
CNR Margin	dB	5.0	5.0	0.9] Cable loss (MS)
Combiner, Filter, Connector Loss	dB	0	4.8	
RX Sub total	dB	-150.0	-138.8	
RX Input Level	dBm	-103.8	-103.4	
Required RX Input Level	dBm	-104.0	-104.0	

S3 - 2 - 5 - 1 Radio frequency budget calculation

5) Cell Radius 24 km for Quasi-Open Area (2-directional)

Item	unit	Downlink	Uplink	
Transmit Frequency	MHz	942.5	897.5	
Transmit Output Power (BTS, MS)	W	10	5	
	dBm	40.0	37.0	
Transmit Antenna Gain	dBi	20.0	2.0	
Antenna Beam Width	deg	60	360	
TX Feeder Length	m	60.0	4.0	50 Antenna Height (m)
TX Feeder Loss(Lft)	dB	3.0	3.6	0.05 Cable loss/m (IV-20D)
Combiner, Filter, Connector Loss	dB	4.8	0	0.9 Cable loss (MS)
Correction by Downbeam Tilt	dB	0	0	
TX Sub total	dB	52.2	35.4	
BTS Antenna Height	m	50	50	50 Ground elev. from MS (m)
MS Antenna Height	m	1.5	1.5	
BTS Service Radius	km	24.0	24.0	24 BTS Service Radius (km)
Propagation Loss	dB	146.8	146.4	Quasi-Open
Receive Antenna Gain	dBi	2.0	20.0	
RX Feeder length	m	4.0	60.0	50 Antenna Height (m)
RX feeder Loss(L.fr)	dB	3.6	3.0	0.05 Cable loss/m (IV-20D)
CNR Margin	dB	5.0	5.0	0.9 Cable loss (MS)
Combiner, Filter, Connector Loss	dB	0	4.8	
RX Sub total	dB	-153.4	-139.2	
RX Input Level	dBm	-101.2	-103.9	
Required RX Input Level	dBm	-104.0	-104.0	

SUPPORTING 3-2-7 COMPUTER SYSTEM

S3-2-7-1

Number of Devices in Each Telephone Center



S3-2-7-1 Number of Devices in Each Telephone Center

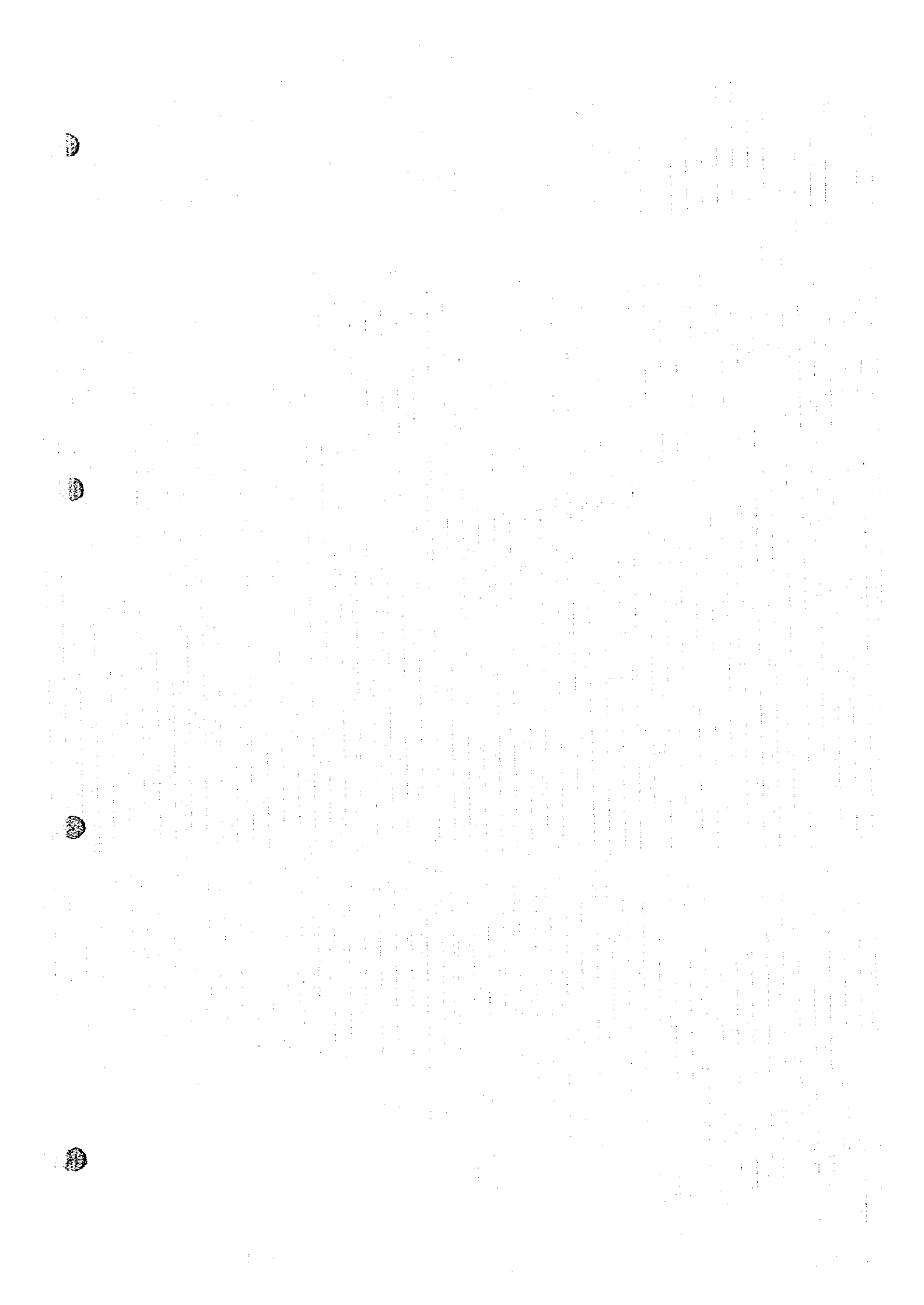
Damascus Rural	Server	PC (Contract)	PC (Cashier)	Total PC	Printer (bill issue)	Hub	Printer
Zabadani	1	1	3	13	3	3	11
Al Nabek	1	1	1	11	1	2	11
Yabroud	1	1	1	11	1	2	11
Jerd	1	1	1	11	1	2	11
Zamalka	1	1	3	13	3	3	11
Jaramana	1	1	2	12	2	2	11
Babela	1	1	2	12	2	2	11
Tall	1	1	2	12	2	2	11
Doma	1	1	3	13	3	3	11
Harsta	1	1	2	12	2	2	11
Daryah	1	1	2	12	2	2	11
Alhamah	1	1	1	11	1	2	11

Aleppo	Server	PC (Contract)	PC (Cashier)	Total PC	Printer (bill issue)	Hub	Printer
Aljameleha	1	2	7	18	7	3	11
Alsabele	1	1	5	15	5	3	11
(Baron)	1	1	3	13	3	3	11
Kan-Alwazeer	1	2	4	15	4	3	11
Alsolymaneyeh	1	1	5	15	5	3	11
Hananow	1	3	7	19	7	4	11
Alansari	1	1	4	14	4	3	11
Alhamdkineyeh	1	3	6	18	6	3	11

Homs	Server	PC (Contract)	PC (Cashier)	Total PC	Printer (bill issue)	Hub	Printer
Alkwatli	1	1	6	16	6	3	11
Almahitta	1	2	4	15	4	3	11
Alwacr	1	3	10	22	10	4	11
Alrastan	1	1	1	11	1	2	11
Al Nasra	1	1	2	12	2	2	11

Hama	Server	PC (Contract)	PC (Cashier)	Total PC	Printer (bill issue)	Hub	Printer
Kowatle	1	1	5	15	5	3	11
AlHader	1	2	5	16	5	3	11
Salanmeh	1	1	3	13	3	3	11
Mhardch	1	1	1	11	1	2	11
Skelbeyeh	1	1	2	12	2	2	11

Lattakia	Server	PC (Contract)	PC (Cashier)	Total PC	Printer (bill issue)	Hub	Printer
Lattakia	1	2	6	17	6	3	11
Tishreen	1	1	5	15	5	3	11
(Azrak Basit)	1	1	2	12	2	2	11
Kerdaha	1	1	2	12	2	2	11
Jableh	1	1	3	13	3	3	11
Total	35	46	121	482	121	92	385





JICA