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, 19 (67, * \$7, 21 2) 6 (59, & (48 \$ / , 7 < 2)
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6 (59, & (6 21 02 % , / (1 (7 : 25.6

(/ LSHQE HUV 9M %REURYV * , YDQRYV

'HSDUWPHQW RI 7HOHFRPPXQLFDWLRQV 5LJD 7
\$]HQHV 6WU 5\$7D, \$9
H PDLO HOPDUV OLSHQEHUV#UWX OY

7R HQVXUH WKDW HQG XVHUV DQG FRQVXPHUV KDY
FRPSDUDEOH DQG XVHU IULHQGO\ LQIRUPDWLRQ UHJD
YLFH TXDOLW\ LW LV QHFHVVDU\ WR LPSOHPHQW DQ
LVODWLYH UHJXODWRU\ DFWV DQG WR SURYLGH PRQ
DFFHVV VHUYLEFHV UHJDUGLQJ WKH FXUUHQW (XURSH
DFWXDO VLWXDWLRQ UHJDUGLQJ WKH TXDOLW\ RI VHU
HQW (XURSHDQ FRXQWULHV GHSHQGV RQ QDWLRQDO
DZDUHQHV 7KH VHUYLEFH PRQLWRULQJ VROXWLRQV
PHDVXUHPHQW PHWKRRGRORJLHV DQG WRROV 7KH SD
LPSOHPHQWDWLRQV IRU GHYHORSRQJ D KDUPRQLVLQJ
LQJ LQ RUGHU WR REWDLQ REMHFWLYH LQIRUPDWLRQ
VHUYLEFHV RQ PRELOH QHWZRUV

Keywords , QWHUQHW DFFHVV TXDOLW\ RI VHUYLEFH

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7KH HOHFWURQLF FRPPXQLFDWLRQV VHFWRU LV I
RSPHQW RI EURDGEDQG HOHFWURQLF FRPPXQLFDWL

7R PDLQWDLQ D KLJK TXDOLW\ OHYHO E\ WKH G\Q
SURYLGHG VHUYLEFHV WKH QDWLRQDO UHJXODWRU\
SHFWV RI UHJXODWHG VHUYLEFH TXDOLW\ LQ WKH HO
VHUYLEFH TXDOLW\ SDUDPHWHUV WKHLU YDOXHV DQ
TXDOLW\ UHTXLUHPHQWV LPSRVHG IRU HOHFWURQLF
ZLWK

7KH VFRSH RI LQYHVWLJDWLRQV LQFOXGHG LQ W
¿QH XQGHU WKH 3RVLWLRQ GRFXPHQWV DQG 5HJXC
RI WKH &RXQFLO ZKLFK HQWHUHG LQWR IRUFH ODV

)XUWKHUPRUH WKH FRQVXPHUV UHTXLUH WKH HJ
QRUPDOO\ DYDLODEOH PD[LPXP DQG DGYHUWLVHG
,QWHUQHW DFFHV VHUYL FHV SDUWLFXODUO\ IRU P
7KH PDLQ REMHFWLYH RI WKH UHVHDFK LV WR
SURDFKHV LQ RUGHU WR ;QG WKH RSWLPDO VROXWL
DFFHV VHUYL FHV RQ PRELOH QHWZRUNV 7KH SDSH
SDUDPHWHUV DQG UHIHUHQFH SRLQWV RI WKH PRELO
VXPHU SHUVSHFWLYH &HUWDLQ W\SHV RI PRELOH E
SUDFWLFDUO\ XVLQJ PHDVXUHPHQW LQLWLDOLVLRQJ V
DOZDUH ,QF > @ PHDVXUHPHQW V\WHP VRIWZDUH S
WHUQHW H[FKDQJH SRLQW \$SSOLFDWLRQ RI 4XDOLW
FRQVLGHUH LQ WKH SDSHU LV XVHIXO DV WKH EDV

/(*,6/\$7,9(\$&76 \$1' 5(*8/\$725<)5\$0(:25.

7KH ,QWHUQHW KDV GHYHORSHG RYHU WKH SDVW
YDWLRQ ZLWK ORZ DFFHV EDUULHUV IRU HQG XVHU
VHUYL FHV DQG SURYLGHUV RI ,QWHUQHW DFFHV V
ZRUN DLPV WR SURPRWH WKH DELOLW\ RI HQG XVHU
UXQ DSSOLFDWLRQV DQG VHUYL FHV RI WKHLU FKRLF

7R UHDFK PDLQ JRDOV FRQFHUQLQJ RSHQ ,QWHUQ
DQG WKH &RXQFLO RI 1RYHPEHU DUH OD\LQJ C
,QWHUQHW DFFHV DQG DPHQGLQJ 'LUHFWLYH
6HUYL FHV 'LUHFWLYH' DQG XVHUV ULJKWV UHODWLQ
DQG VHUYL FHV DQG 5HJXODWLRQ (8 1R RQ U
PXQLFDWLRQV QHWZRUNV ZLWKLQ WKH 8QLRQ > @
&RXQFLO DW WKH ;UVW UHDFK ZLWK D YLHZ WR W
RSHQ ,QWHUQHW DFFHV ZDV DGRSWHG E\ WKH &RXQ

\$UWLFQH RI WKH 8QLYHUVDO 6HUYL FHV 'LUHFV
6WDWHV WR HQVXUH WKDW XQGHUWDLQLQJ SURYLGL
FDWLRQV VHUYL FHV SXEOLVK FRPSDUDEOH DGHTXD
LW\ RI WKHLU VHUYL FHV \$W WKH VDPH WLPH 86'
VSHFLI\ LQWHU DOLD WKH TXDOLW\ RI VHUYL FHV SD
IRUP DQG PDQQHU RI WKH LQIRUPDWLRQ WR EH SXEC
KDYH DFFHV WR FRPSUHKHQVLYH FRPSDUDEOH UH
> @

7R SURYLGH LQIRUPDWLRQ RQ WKH EHVW SUDFW
UHWDLQ ,QWHUQHW DFFHV VHUYL FHV DQG UHFRPPH
HWHUV DQG PHDVXUHPHQW PHWKRGV WKHUH DUH W
(XURSHDQ &RQIHUHQFH RI 3RVWDO DQG 7HOFRPPX
(OHFWURQLF &RPPXQLFDWLRQV &RPLWWHH 5HSRUW
6HW RI 4XDOLW\ RI 6HUYL FHV 3DUDPHWHUV DQG 0HDV
\$FFHV 6HUYL FHV > @ DQG &(37 (& 5HFRPPHQGDWLR
WLRQ RQ 3URYLVLRLQ RI &RPSDUDEOH ,QIRUPDWLR
4XDOLW\ > @

'HJUDGDWLRQ RI QHWZRUN SHUIRUPDQFH RI ,3 E
JHQHUDO FRQJHVWLRQ LQ WKH QHWZRUN RU WDUJHV
VFULSWLRQV RI WKHVH LVVXHV DUH LQFOXGHG LQ W
WURQLF &RPPXQLFDWLRQV %(5(& GRFXPHQWV UHOD
VHUFLFH LQ WKH VFRSH RI QHW QHXWUDOLW\ > @±>
(XURSHDQ 7HOHFRPPXQLFDWLRQV 6WDQGDUGV ,C
7HOHFRPPXQLFDWLRQ 8QLRQ ,78 GHOLYHUDEOHV Q
76 > @ (76, (* > @ (76, (* > @
PHQGDWLRQV < > @ DQG < > @ HVWDEOLVK
4R6 SDUDPHWHUV

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:KDW SDUDPHWHUV VKRXOG EH PHDVXUHG KRZ
ZKHUH WKH\ VKRXOG EH PHDVXUHG ± WKHVH DUH HV
SDUDEOH LQIRUPDWLRQ RQ WKH TXDOLW\ RI ,QWHU
WUDQVPLVLRQ VSHHG GHOD\ GHOD\ YDULDWLRQ S
QHFHVVDU\ IRU HYDOXDWLQJ WKH TXDOLW\ RI UHWD
RI PHDVXUHPHQW SULQFLSOHV E\ 4R6 DVVHVPHQW
IROORZLQJ VFHQDULRV > @

\$ 4R6 (YDOXDWLRQ RI WKH ,QWHUQHW 6HUFLFH :

2QO\ WKH QHWZRUN VHFWRQ GLUHFWO\ LQÀXHQ
ZLOO EH DVVHVHG 7KH ,QWHUQHW VHUFLFH SURYI
SDUW DQG WKH VHUFLFH SURYLGHU QHWZRUN SDUW
,QWHUQHW VHUFLFH SURYLGHU > @

% 4R6 (YDOXDWLRQ RI WKH \$FFHVV WR 1DWLRQD

%\ WKH 4R6 HYDOXDWLRQ RI WKH DFFHVV WR D
,;3 WKH WHVW VHUYHU LV ORFDWHG DW D QDWLRQ
LQJ WKH 4R6 DFFHVV WR WKH ,;3 RI WKH GLUHQUW
FRXQWU\

& 4R6 (YDOXDWLRQ RI \$FFHVV WR ,QWHUQDWLRQ

)RU WKH 4R6 HYDOXDWLRQ RI WKH DFFHVV WR D
DUH ORFDWHG DW QDWLRQDO LQWHUQHW H[FKDQJH
ORZ IRU FRPSDULVRQV EHWZHHQ WKH FRQQHFWLYLW
FRXQWULHV 7KLV WHVW VFHQDULR SUDFWLFDOO\ FR
OLQV ZLWK GLUHQUW FRXQWULHV

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%DVHG RQ WKH DQDO\VLV SURYLGHG LQ (&& 5HS
WLRQ LW PD\ EH FRQFOXGHG WKDW ;YH JURXSV R
LQ WKH PLQLPXP VHW IRU WKH JHQHUDO HYDOXDWLR

\$ 7UDQVPLVLRQ 6SHHG

7UDQVPLVLRQ VSHHG PLQLPXP DQG DYHUDJH Y
ELWV SHU VHFRQG PESV RU NLORELWV SHU VHFRQ
DFKLHYHG VHSUDUDWHO\ IRU GRZQORDGLQJ DQG XSO
UHPRWH ZHE VLWH DQG D XVHU V WHUPLQDO HTXLSF

% 'HOD\

'HOD\ DYHUDJH YDOXH LV H[SUHVVHG LQ PLOOLV
WLPH LQ PLOOLVHFRQGV WKDW LV QHHGHG IRU DQ ,C
(FKR 5HTXHVW 5HSO\ 3LQJ WR D YDOLG ,3 DGGUHV
SURYLGH WKH 5RXQG 7ULS 7LPH 577 DVVHVPHQW V
D VLJQDO WR EH VHQW SOXV WKH OHQJWK RI WLPH L

& 'HOD\ 9DULDWLRQ

'HOD\ YDULDWLRQ RU -LWWHU YDOXH LV H[SUHVV
SDLU RI ,3 SDFNHW SDUDPHWHUV UHSUHVHQW WK
GLUHFWRQ PHDVXUHG IRU WZR FRQVHFXWLYH SDFN

' 3DFNHW /RVV 5DWLR

3DFNHW ORVV UDWLR YDOXH LV H[SUHVVHG LQ SH
SDFNHW RXWFRPHV WR WRWDO WUDQVPLWWHG ,3 SD

(3DFNHW (UURU 5DWLR

3DFNHW HUURU UDWLR YDOXH LV H[SUHVVHG LQ
URUHG ,3 SDFNHW RXWFRPHV WR WKH WRWDO RI VXF
HUURUHG ,3 SDFNHW RXWFRPHV LQ D SRSXODWLRQ R

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%HIRUH WKH SURIRXQG LQYHVWLJDWLRQ WKH 4
DV D IHDVLELOLW\ VWXG\ WR YDULRXV UHIHUHQFH S
ORFDWHG LQ GLUHUVHQW SODFHV ZLWKLQ WKH ,QWHU
DUH KRUVHG E\ ,QWHUQHW VHUYLFH SURYLGHUV DQ
7KH DFFHVV FDSDELOLWLHV WR WKH RSHUDWRU WHV
VHUYLFH SURYLGHUV EHFDXVH WKH LQWHUFRQQHFV
FDSDFLW\ 0RUH HTXLYDOHQW PHDVXUHPHQW UHVXO

VHUYHU DQG UHIHUHQFH SRLQW DUH ORFDWHG DEUR
QDWLRQDO OLQNV ZLWKRXW REMHFWLYH SRVVLELOLY
QDWLRQDO OHYHO 7KH DFKLHYHG PHDVXUHPHQW UH
VRPHWLPHV DUH REWDLQHG LQFRPSDUDEOH EHFDXV
JRULWKPV ZHUH GLuHUHQW 7KHVH REVWDFOHV UHT
WKH SURYLGHG PHDVXUHPHQWV

)RU WKH LQYHVWLJDWLRQV PHDVXUHPHQWV ZHU
EDVHG RQOLQH WRROV PRUH IRFXVHG RQ 22./\$ 6SH
OLQH WRRO > @ 9LVXDOZDUH ,QF RQOLQH WHVW W
635. ,QWHUQHW DFFHVV 4R6 PHDVXUHPHQW V\WHP

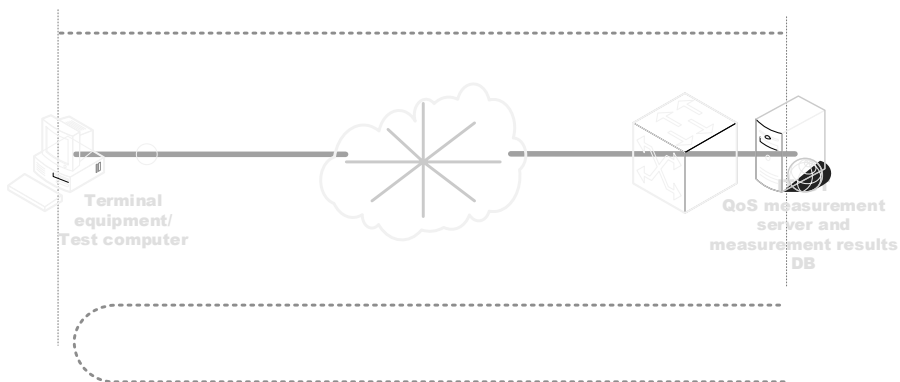
22./\$ 6SHHGWHVW WRRO UDNV PRELOH QHWZRU
SHUIRUPDQFH IRU WKH IDVWHVW DYDLODEOH WHFKQ
WKH W\SLFDO SHUIRUPDQFH \RX FDQ DFKLHYH XVLQ
JLYHQ PRELOH QHWZRUN > @

575 1HW7HVW RQOLQH WRRO DOORZV PHDVXULQJ
GLUHFWRQV ± GRZQOLQN XSOLQN DQG ODWHQF\ RI
WRRO LV ORFDWHG DW \$XVULDQ QDWLRQDO LQWHU
FDOO\ FRYHUV WKH 4R6 DVVHVPHQW IRU LQWHUQDV

9LVXDOZDUH ,QF RQOLQH WHVW WRRO SURYLGH
WHVWV VXFK DV VSHHG PHDVXUHPHQWV 9R,3 PHDVX
WHVWV 9LVXDOZDUH ,QF PHDVXUHPHQW WRRO XVH
FRXQWULHV DURXQG WKH ZRUOG DQG WKLV WHVW V
LQWHUQDWLRQDO OLQNV

&RPSDULQJ GLuHUHQW RSWLRQV RI PHDVXUHPHQ
VHVPHQW UHIHUHQFH SRLQWV DQG PHDVXUHPHQW
DUH SURYLGHG YLD WKH XVHU LQWHUIDFH RI ZHE S
PHDVXUHPHQW VHUYHU LV ORFDWHG QHDUE\ WKH ,QV
OLQNV LV FRQQHFWHG WR WKH PDLQ H\FKDQJH SRLQ

*HQHUDO PHDVXUHPHQW SULQFLSOHV DQG FRQQH



\$V PHDVXUHPHQW V\ VWHP VRIWZDUH 9LVXDOZDUH
6HUYHU %XVLQHVV&HQWHU' ZDV XVHG 7KH ,QWHUQH
(67 LV KRVWHG E\ WKH /DWYLDQ UHJXODWRU\ DXWKF
DW 635.¶V ZHEVLWH > @ IURP /DWYLDQ ,3 DGGUHV
SHUIRUPHG RQ WKUHH PRELOH *60 8076 RSHUDWRU¶
:LQGRZV RSHUDWLQJ V\ VWHP ,QWHUQHW ([SORUHU
WLDOO\ FRQQHFVHG +XDZHL 86% VWLFN PRGHPV (
ZKLFK VXSSRUW FRPPXQLFDWLRQ LQ DOO W\SLFDO IU
> @ > @ > @

7ZR W\SHV RI PHDVXUHPHQWV ZHUH SHUIRUPHG I
VXUHPHQWV LQ GLUHUHQW JHRJUDSKLFDO ORFDWLRQ
ORFDWLRQV \$V WKH URXWHUV ZHUH FROORFDWHG T
DEOH PHDVXUHPHQW UHVXOWV WKH 86% GRQJOHV DQ
H[FOXGH VLPXOWDQHRXV GDWD WUDQVPLVVLRQ DQG
LQWHUIHUHQFH 7KH XVHG PHDVXUHPHQW VHTXHQFH
PDQDJHPHQW VRIWZDUH VFULSW FRPPDQGV DQG IRU
LQ)LJ ,Q WKH ¿UVW VFHQDULR WKUHH PHDVXUHP
WRU¶V QHWZRUN 7KH VHFRRG VFHQDULR DOORZV FK
QHZ PHDVXUHPHQW VHVVLQR 7KH DGYDQWDJH RI W
VHTXHQFH EXW WKLV VFHQDULR UHTXLUHV WKH H[WU
QHWZRUNV DIWHU D VLQJOH PHDVXUHPHQW VHVVLQR

1.scenario



2.scenario



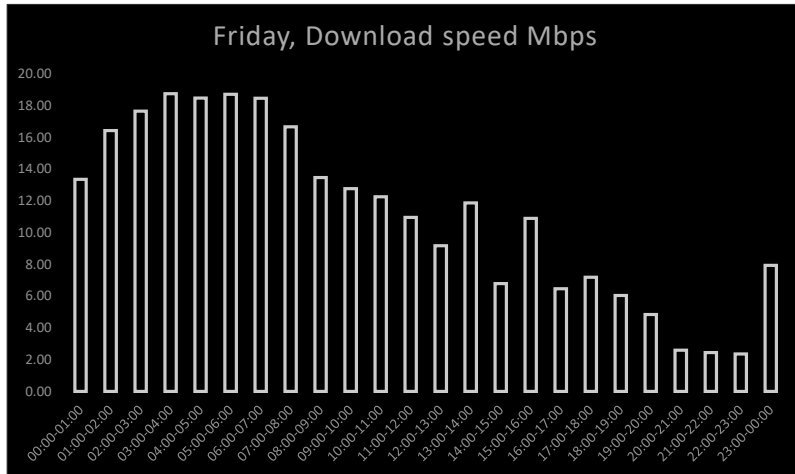
)LJ 4R6 PHDVXUHPHQW VHVVLQR VHTXHQFH VFHQ

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7KH PDLQ REMHFWLYH RI WKLV VHFWRU RI WKH
YLGHG PHDVXUHPHQWV LQ RUGHU WR PDNH FRQFOXV
SHUVSHFWLYH

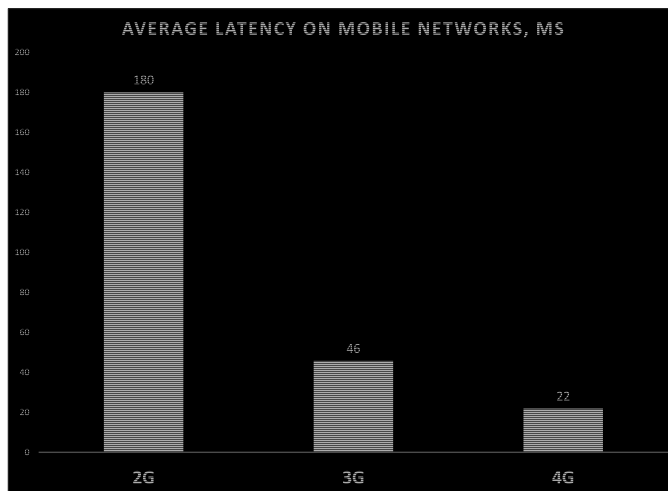
)RU WKH VKRUW WHUP PHDVXUHPHQWV DYHUDJH
VXUHPHQW VHVVLQRV ZHUH SURGXFHG DQG FDOFXO
UL]HG E\ QHWZRUN WHFKQRORJ\ E\ HDFK PHDVXUHP
SHU RSHUDWRU¶V QHWZRUN)RU WKH ORQJ WHUP P
DJH YDOXHV ZHUH SURFHVHG ZLWKLQ RQH ZHHN DQ

WLF PHDQ YDOXHV KRXU E\ KRXU 2QH GD\ H[DPSOH
VKRZQ LQ)LJ



)LJ ([DPSOH RI WKH ORQJ WHUP PHDVXUHPHQWV RI * GRZQ
KRXUV

&ROOHFWHG PHDVXUHPHQW GDWD ZHUH SURFHV
WUDQVPLVLRQ VSHHG ODWHQF\ GHOD\ YDULDWLR
WHQF\ GHYLDWLRQ ZDV DERXW PLOOLVHFRQGV RQ
RQ * QHWZRUNV DQG XS WR PLOOLVHFRQGV RQ
UHFPPHQGDWLRQ LV WKDW RQH ZD\ ODWHQF\ VKRX
FROOHFWHG PHDVXUHPHQW GDWD ZHUH GLYLGHG E\
FDOFXODWLQJ DYHUDJH ODWHQF\ YDULDWLRQV RQ P
WHQF\ YDOXH RQ * PRELOH QHWZRUNV LV TXLWH HQ
VHUFLFHV DYDLODEOH RQ WKH ,QWHUQHW LI WKH ,Q
LQJ VSHFLF VHUFLFHV



)LJ ([DPSOH RI WKH DYHUDJH URXQG WULS ODWHQF\ YDULD
QHWZRUNV

7KH DFWXDO PHDVXUHG WUDQVPLVVLRQ VSHHG
RU * QHWZRUN WHFKQRORJLHV SURYLGHG LQ D JLY
PD[LPXP DFWXDO WUDQVPLVVLRQ VSHHG E\ GHGLFD
PHQW FRQGLWLRQV GRHFDQDQW PHVFKHHG
YHQGRUV ± RU OESV ZKLOH WKH GHYLDWLRQ
GHSHQGV RQ WKH ,QWHUQHW XVDJH DFWLYLWLHV LQ

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7KH SURSRVHG PHDVXUHPHQW WHFKQLTXHV DSS
WR DOO PHDVXUHPHQWV DQG XVLQJ GHGLFDWHG UH
PLQDWLRQ SRLQW WR D QDWLRQDO ,QWHUQHW H[FK
FRPSDUDEOH LQIRUPDWLRQ DERXW PRELOH EURDGE
WR FRQVXPHUV 7KH SURYLGHG PHDVXUHPHQW PHW
SUDFWLFDO LPSOHPHQWDWLRQ RI UHJXODWRU\ IUD
XVHU IULHQGO\ LQIRUPDWLRQ SXEOLVKLQJ

7DNLQJ LQWR DFFRXQW WKDW WKH PRELOH QHWZ
E\ 3KHDY\` XVHU¶V DFWLYLWLHV VORZV GRZQ VKRUV
LI D ODUJH QXPEHU RI PHDVXUHPHQW SODFHV DUH F
PHQWV JLYH WKH REMHFWLYH LQIRUPDWLRQ DERXW
WR HQG XVHUV DQG QHWZRUN UHVRXUFHV VXVFLHQW

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9LVXDOZDUH ,QF \$YDLODEOH DW KWWS ZZZ YLVXDOZD
5HJXODWLRQ (8 RI WKH (XURSHDQ 3DUOLDPHQ
YHPEHU OD\LQJ GRZQ PHDVXUHV FRQFHUQLQJ RSHQ
UHFWLYH (& RQ XQLYHUVDO VHUYLFH DQG XVHUV¶
QLFDWLRQV QHWZRUNV DQG VHUYLFHV DQG 5HJXODWLR
PRELOH FRPPXQLFDWLRQV QHWZRUNV ZLWKLQ WKH 8QL
3RVLWLRQ (8 1R RI WKH &RXQFLO DW ;UVW UH
RI D 5HJXODWLRQ RI WKH (XURSHDQ 3DUOLDPHQW DQG
FRQFHUQLQJ RSHQ LQWHUQHW DFFHVV DQG DPHQGLQJ
3DUOLDPHQW DQG RI WKH &RXQFLO RQ XQLYHUVDO VH
WURQLF FRPPXQLFDWLRQV QHWZRUNV DQG VHUYLFHV D
(XURSHDQ 3DUOLDPHQW DQG RI WKH &RXQFLO RQ URDP
QHWZRUNV ZLWKLQ WKH 8QLRQ \$GRSWHG E\ WKH &RXQF
'LUHFWLYH (& RI WKH (XURSHDQ 3DUOLDPHQW DQ
RQ XQLYHUVDO VHUYLFH DQG XVHUV¶ ULJKWV UHODWL
DQG VHUYLFHV 8QLYHUVDO 6HUYLFH 'LUHFWLYH
7KH (XURSHDQ &RQIHUHQFH RI 3RVWDO DQG 7HOHFRPP
(OHFWURQLF &RPPXQLFDWLRQV &RPPLWWHH (& 5HSR
6HUYLFH 3DUDPHWHUV DQG 0HDVXUHPHQW 0HWKRGV IRU
7KH (XURSHDQ &RQIHUHQFH RI 3RVWDO DQG 7HOHFRPP
(OHFWURQLF &RPPXQLFDWLRQV &RPPLWWHH (& 5HFR
&RPSDUDEOH ,QIRUPDWLRQ RQ 5HWDLO ,QWHUQHW \$FFH

7KH %RG\ RI (XURSHDQ 5HJXODWRUV IRU (OHFWURQLF &
ZRUN IRU TXDOLW\ RI VHUYLFH LQ WKH VFRSH RI QHW

7KH %RG\ RI (XURSHDQ 5HJXODWRUV IRU (OHFWURQLF &
IRU TXDOLW\ RI VHUYLFH LQ WKH VFRSH RI QHW QHXWU
SS ± SS ±

7KH %RG\ RI (XURSHDQ 5HJXODWRUV IRU (OHFWURQLF &
PRQLWRULQJ TXDOLW\ RI ,QWHUQHW DFFHVV VHUYLFHV
1R %R5

(76, (* 6SHHFK 3URFHVVVLQJ 7UDQVPLVVLRQ DQG
UHODWHG 4R6 SDUDPHWHU GH¿QLWLRQV DQG PHDVXUHF

(76, 76 6SHHFK DQG PXOWLPHGLD 7UDQVPLVVLRQ
SRSXODU VHUYLFHV LQ PRELOH QHWZRUV 3DUW \$VV

(76, (* 6SHHFK DQG PXOWLPHGLD 7UDQVPLVVLRQ
0HDVXUHPHQW *XLGHOLQHV

(76, (* 6SHHFK DQG PXOWLPHGLD 7UDQVPLVVLRQ
ZRUN SHUIRUPDQFH PHWULFV DQG PHDVXUHPHQW PHW
PHWULFV DQG PHDVXUHPHQW PHWKRGV LQ ,3 QHWZRUV

,78 7 5HFRPPHQGDWLRQ < ,QWHUQHW SURWRFRO DV
ZRUN SHUIRUPDQFH ,QWHUQHW SURWRFRO GDWD FRPP
DQG DYDLODELOLW\ SHUIRUPDQFH SDUDPHWHUV

,78 7 5HFRPPHQGDWLRQ < ,QWHUQHW SURWRF
DQG QHWZRUV SHUIRUPDQFH 1HWZRUV SHUIRUPDQFH R
/DWYLDQ UHJXODWRU\ DXWKRULW\ 3635.1 \$YDLODEOH D

\$QFDQV * %REURYV 9 DQG ,YDQRYV * 6SHFW
FRPPXQLFDWLRQV LQWHUQHW RI 3K\VLV DQG 7HFKG
± '2, OSWV

*HVVQHU & /RQJ WHUP HYROXWLRQ \$ FRQFLVH L
PHQW UHTXLUHPHQWV SS ±

/OR\G (YDQV 5 4R6 LQ LQWHJUDWHG * QHWZRUV
2RNOD \$YDLODEOH DW KWWS ZZZ RRNOD FRP

6SHHGWHVW \$YDLODEOH DW KWWS ZZZ VSHHGWHVW Q
575 1HW7HVW \$YDLODEOH DW KWWSV ZZZ QHWJWHVW

3\$. \$/32-808 .9\$/ ,7-7(6 0œ5®-808 \$76. \$,7(6 381.7
3œ7®â\$1\$,17(51(7\$ 3\$. \$/32-80\$0 02% ,/\$-26 7®./

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. R S V D Y L O N X P V

/DL QRGURãLQ—WX OLHWRW—MLHP SLHHMDPX DV
SDU LQWHUQHWD SLHN°XYHV SDNDOSRMXPX NYDOLW
QRUPDWYR DNWX N—DU SDNDOSRMXPX NYDOLW—
PRQLWRULQJD PHWRGLNX DNWXDOLJ—FLMD DWELOV

UHJXO•ãDQDV LHWYDU— QRWHLNWDN—P YDGO`QLM—
WHKQLVNR XJUDXG]`EX (LURSDV 6DYLHQ`EDV GDO`E
LQVWUXPHQWL YDL U`NL SDNDOSRMXPX LQWHUQH
PRQLWRULQJD QRGURãLQ—ãDQDL N— DU` QDY SLHP
QRGURãLQ—ãDQDL 3DNDOSRMXPX NYDOLW—WHV XJU
(LURSDV 6DYLHQ`EDV GDO`EYDOVW` LU DWNDU`JD G
WHKQLVNDN—P LHVS•M—P

3•W`MXPDP QR]`P`J—NDLV XJGHYXPV LU SDNDOSRM
NDV JDOYHQR SDPDWSULQFLSX GH¿Q•ãDQD YLHQRW
QRGURãLQ—ãDQDL W—GHM—GL VQLHG]RW LHVS•MDP
SDU SDNDOSRMXPX NYDOLW—WL W—V L]PDL¼—P XC
JDQ SDNDOSRMXPX VQLHG]•MLHP \$QDOL]•WD GDã—C
P•U`ãDQDL L]PDQWRWX DOJRULWPX XQ P•U`MXPX DW
WR HOHNWURQLVNR VDNDUX W`NOX SRVPX L]PDQWR
SDUDPHWUX L]Y•OH NYDOLW—WHV QRY•UW•ãDQ—

3•W`MXPDP UH]XOW—W— LU VQLHJWL LHWHLNXPL
L]PDQWRMDPR P•U`ãDQDV SULQFLSX SLHP•URãDQ—
ND SDNDOSRMXPX NYDOLW—WHV P•U`MXPX YHLFDPL
SLHVO•JXPDP SXQNWD O`G] QDFLRQ—ODMDP LQWHUQ
SDNDOSRMXPX VQLHG]•MLHP LHVS•MDPL ODE—NR VD
LHJ]ãDQX YLHQODLNXXV REMHNW`YL UDNVWXURMRW
SDNDOSRMXPDP NYDOLW—WL N— DU` SDNDOSRMXPX