Campus Telephony Service and Pricing Proposed Changes

Updated to reflect May 1, 2022 target date

Please also see About the campus telephone migration project

Summary

IST proposes:

- Move to a primarily softphone client model for campus telephony. That is, most telephone desksets would be eliminated. Users would be provided a softphone client and would use their desktop computer or laptop to make and receive telephone calls. Special cases requiring a conventional phone would be accommodated as needed.
- Elimination of telephone rental charges and move/add/change (e.g. installation) charges effective May 1, 2022. That is, the softphone client would be provided without charge. Needed wired phones would be provided without a rental charge.
- Given the loss of telephone rental income, appropriate additional operating budget be allocated to fund institutional IT operating expenses that have relied on the rental income

Background and Motivation

There are approximately 8,000 campus telephones (or lines) with a typical monthly rent of approximately $19 creating approximately $1.8M in gross annual rental income. The monthly rental of desk telephones is historical; the dollar amount has no relation to the capital or operating costs. The income significantly exceeds the cost to operate the telephone service, and the excess revenue is used to fund institutional IT operating expenses and IST operating expenses. Given the loss of telephone rental income, additional operating budget would be requested to fund institutional IT operating expenses that have relied on the rental income. Appendix B includes a table of what IST proposes are institutional expenses, and IST expenses, that either have no budget, or insufficient budget. IST would provide a more detailed accounting of these expenses well in advance of the 2022/2023 budget year start.

The operation of this service as a revenue generator is not consistent with the approaches for other centrally provided services (e.g. email). Most other telephone related costs are passed on to clients with no mark up (e.g. long distance charges and cell phones).

The high equipment rental rates encourage sharing of telephones and voice mail boxes. The current funding model creates unnecessary internal budget transfers. The use of normal operating budget to fund operations, versus use of a revenue stream not widely understood, is more transparent. The reduction in charge outs would reduce costs to the university due to reduced time spent administering billing, account transfers, and correcting errors.

A move to softphones can be justified based on improved service (for most use cases) and reduced cost. The approximately 7,000 existing telephone desk sets will require eventual replacement with new models, at significant cost. Reducing the number of physical phones needed reduces that eventual renewal cost. Labour costs associated with installing, moving, and maintaining physical phones is reduced under a primarily softphone model.

There are user experience benefits to softphones, including the additional features that integrate with computer workstations, such as online messaging, user presence indication, video, conference calling, file and screen sharing, and voicemail transcription. Softphones can also be used on laptop computers and smartphones, and can be an important part of supporting Work From Home (WFH).

History

Prior to 1996, the telephone system was operated by Bell. From https://bulletin.uwaterloo.ca/1996/dec/03tu.html (included as Appendix E)

> *Until now, Bell has owned the cables and phones all over campus. "We will now become the owners of the cable," explains Bruce Uttley of IST, "so that we can stop paying monthly maintenance costs to Bell.*

Our understanding is that prior to 1996, the telephone rental charges were collected centrally and then paid to Bell. With the upgrade announced in 1996, UW insourced the telephone system, and owned the PBX and telephones. The rental charges were left unchanged but were paid to IST with the revenue retained internally. Approximately $500,000 per year was paid back to the centre. We do not know the annual rental income from that time, or what the costs were to operate the telephone service.

Today the rental income significantly exceeds the cost to operate the telephone service and pay for telephone equipment. The rental income is used to cover the $500,000 annual payment to the centre, and cover general IT operating costs, mostly unrelated to telephony.

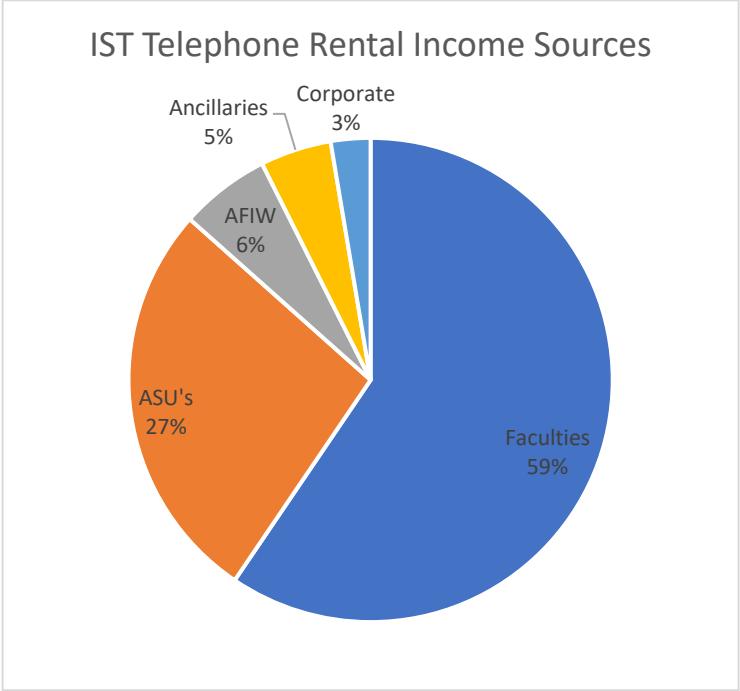
Financial

IST receives approximately $1,863,688 annually in telephone deskset rental charges. $509,896 is returned to the centre, leaving approximately $1,353,791 which is used for institutional IT expenses and IST operating expenses. (all non salary). Without the telephone rental charge income, additional operating budget would be requested for institutional IT expenses.

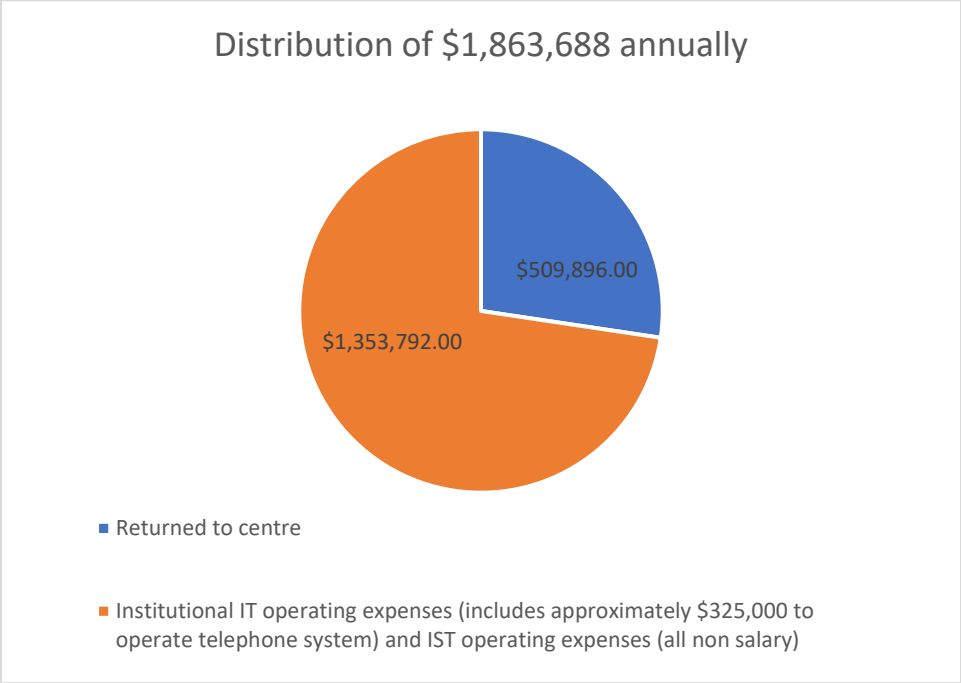
The sources of telephone rental income are as follows (2019/2020 fiscal year) :

Faculties	$ 1,108,705
ASU's	$ 504,737
AFIW	$ 112,289
Ancillaries	$ 88,617
Corporate	$ 49,340
Total	$ 1,863,688

(see https://lineone.uwaterloo.ca/tel-Billing/ for the list of Corporate accounts, that are indicated with a 'C' prefixed to department code)



The distribution of telephone rental income is as follows:

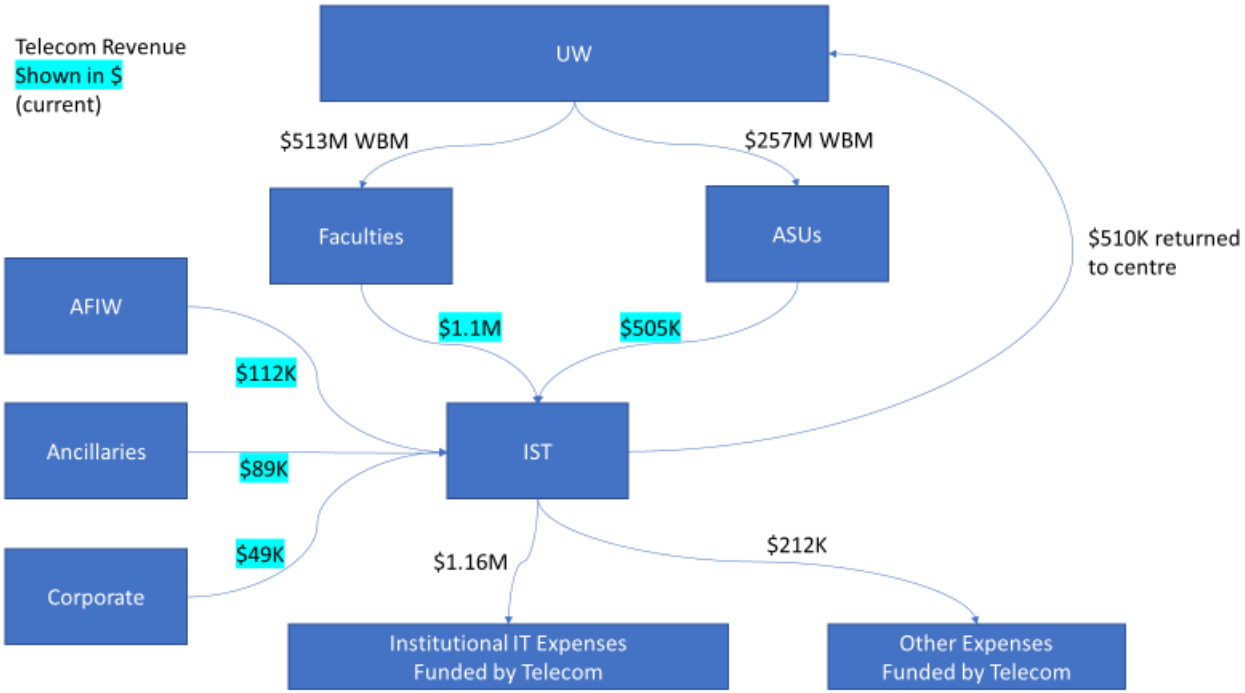


Appendix B includes a table of what IST proposes are institutional expenses, and IST expenses, that either have no budget, or insufficient budget. IST would provide a more detailed accounting of these expenses well in advance of the 2022/2023 budget year start.

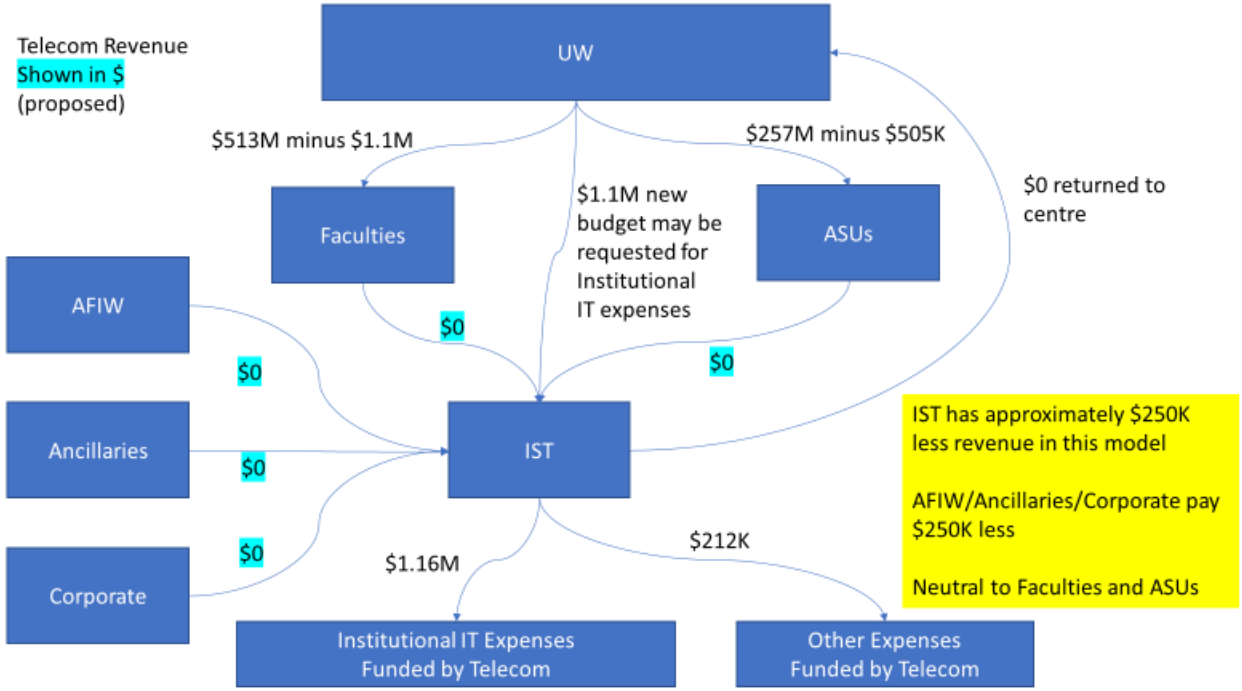
If additional operating budget is allocated to fund institutional IT expenses, steps may be needed to ensure that cost is fairly covered by the Faculties, ASU's, Ancillaries, AFIW and Corporate users. The following is recommended:

	Approach	Budget change
ASU's	ASU's should have their operating budget reduced through a reduction in the '60510 Telephone Equipment' budget corresponding to current rental charges, effective May 1, 2022. A review of ASU 60510 current budget amounts will be needed. Discussion will also be needed with Finance on when budget changes are realistic.	-$504,737
AFIW	TBD. See Appendix F	
Ancillaries	TBD. See Appendix F	
Corporate	TBD. See Appendix F	
Faculties	If additional operating budget is allocated to fund institutional IT expenses , faculty budgets would be reduced by default given WBM. This would be balanced by faculties no longer paying telephone rental charges.	

Current Telecom Revenue:



Proposed:



It will take time to review the above and determine appropriate approaches for the areas shown. Logical timing for budget changes would be for the 2022/2023 fiscal year.

IST is proposing a phased approach, such that many of the benefits of this proposal can be achieved before May 1, 2022.

Telephones

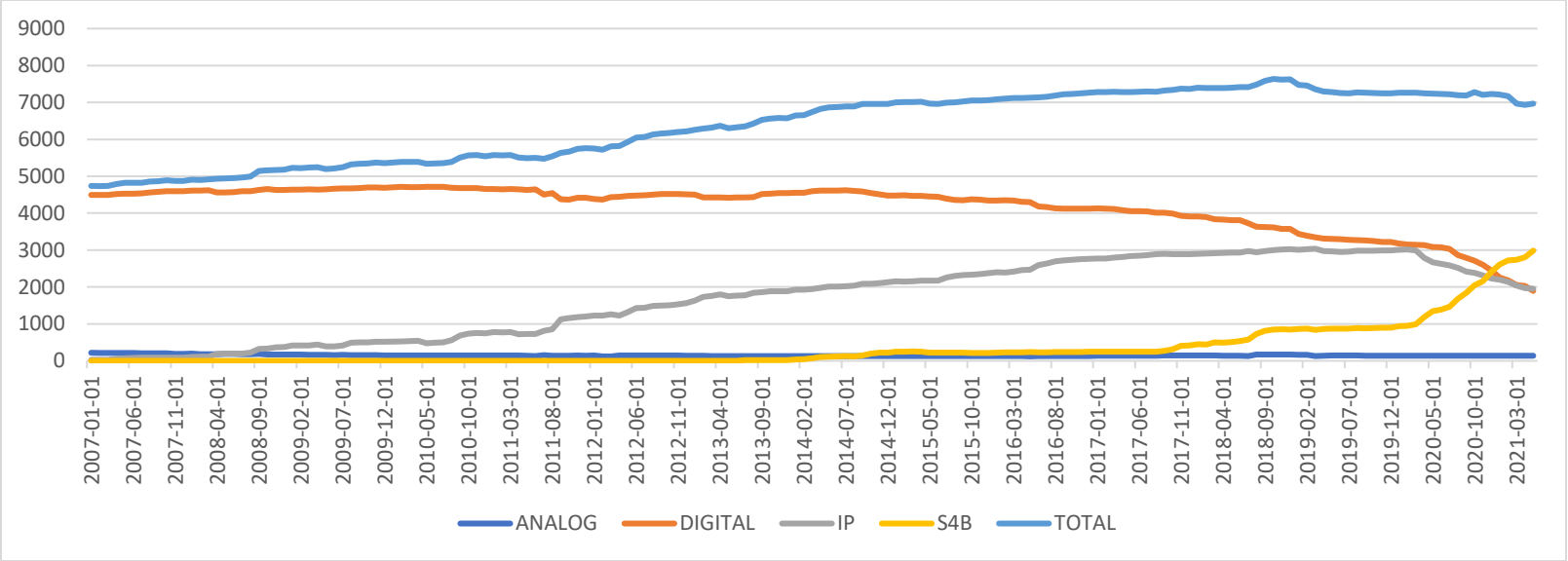
Most telephones installed prior to approximately 2010 require dedicated cabling to the main campus PBX (or to a satellite PBX in some satellite campus locations). We refer to these hardwired phones as 'digital phones'. Most telephones installed after 2010 do not rely on dedicated cabling, but rather use the network. These phones are called 'IP phones'. More information about digital phones and IP phones is available at Telephone sets/Voicemail quick reference guides

The IP phones IST installed from 2010 up until about 2016 were Nortel (later Avaya) model 1140E. These, like the digital phones, provide a telephone extension in the 3xxxx range. These IP phones connect to the main campus PBX over the network.

After 2016 IST has deployed 'Skype for Business' (S4B) telephones in new buildings and during major renovations. The desksets are the Polycom VVX IP phone model. These provide a telephone extension in the 4xxxx range. The IP phones connect to a S4B server environment, which is also connected to the main campus PBX.

S4B includes a softphone client, which can be used instead of, or in addition to, the Polycom deskset.

Model	Number on campus (as of May 2021)
1140E IP Phone	1950
S4B (softphone and/or deskset)	3000
Digital phone	1900



Migration to Primarily Softphone Model

The below describes a proposed desired end state to be in place before May 1, 2022.

- Users would be migrated from their existing digital phone or IP phone, to the S4B softphone client, with no deskset provided in most cases.
- Desksets would be provided in special cases as follows:
    - Justified by reasons of accessibility. Costs covered institutionally.
    - Special telephony requirements that cannot be met otherwise. (e.g. call centres)
        - Existing services will be left in place, or migrated to new technology as institutional expense, at a time of IST's choosing in consultation with client
        - New installations with special requirements may have one time equipment charges.
    - Note unfortunately there is no S4B linux client. IST will provide an appropriate deskset until an alternative solution can be provided.
    - Desksets will generally not be provided in any other cases. Exception approval process will be needed.

- Users would be given a new extension in the 4xxxx range, instead of the 3xxxx range. Their old 3xxxx extension would be forwarded to their new 4xxxx extension for a period of 3 months. Note each forwarded call uses one of a limited number of telephone lines for the duration of the forwarded call. Reliance on forwarding needs to be reduced to the extent possible.
- Existing Polycom desksets would be removed in most cases.
- Emergency phones in elevators would continue to be supported as now, and costs covered as an institutional expense
- Emergency digital phones are provided in key areas. These are restricted to making on campus calls, emergency calls, and cannot receive calls. Costs are covered as an institutional expense. Such phones could be installed:
    - On walls near exits and elevators on all floors in all buildings
    - In labs, shops, and other areas with unusual hazards (e.g. equipment, chemicals). Large spaces would have an appropriate number of digital phones installed.
- Departments would be responsible for purchasing headsets, USB handsets, cameras, or other peripherals as needed. IST will provide advice on products and suppliers. IST will coordinate an initial bulk purchase of headsets if possible
- At a later time, IST will be exploring replacing the S4B client with Teams. Further investigation is needed. S4B is supported by Microsoft until 2025.

Phased Approach

IST is proposing a phased approach as follows:

- The 'Migration to a Primarily Softphone Model' as described above to be discussed and refined in consultation with stakeholders, for full implementation effective May 1, 2022.
- Elimination of telephone rental charges effective May 1, 2022, after the financial elements above are discussed and refined in consultation with stakeholders.

IST is offering the S4B softphone only solution to all clients effective June 1, 2020. This is provided at a reduced monthly charge as follows:

Original price	Effective June 1, 2020	After May 1, 2022
$15.50	$8 [1]	$0

[1] - plus $15.50/month for zero to three months of forwarding from the existing 3xxxx extension to the new 4xxxx extension. If no forwarding is requested, there is no additional forwarding charge.

Approvals

To proceed with this plan, IST would need:

- Support of UCIST and CTSC on the technology elements (migration to primarily softphone model, per above), recognizing the proposed desired end state above will require further discussion and refinement in consultation with stakeholders.

- Support of the Provost and Deans on the financial elements above, recognizing the proposed desired end state above will require further discussion and refinement in consultation with stakeholders.

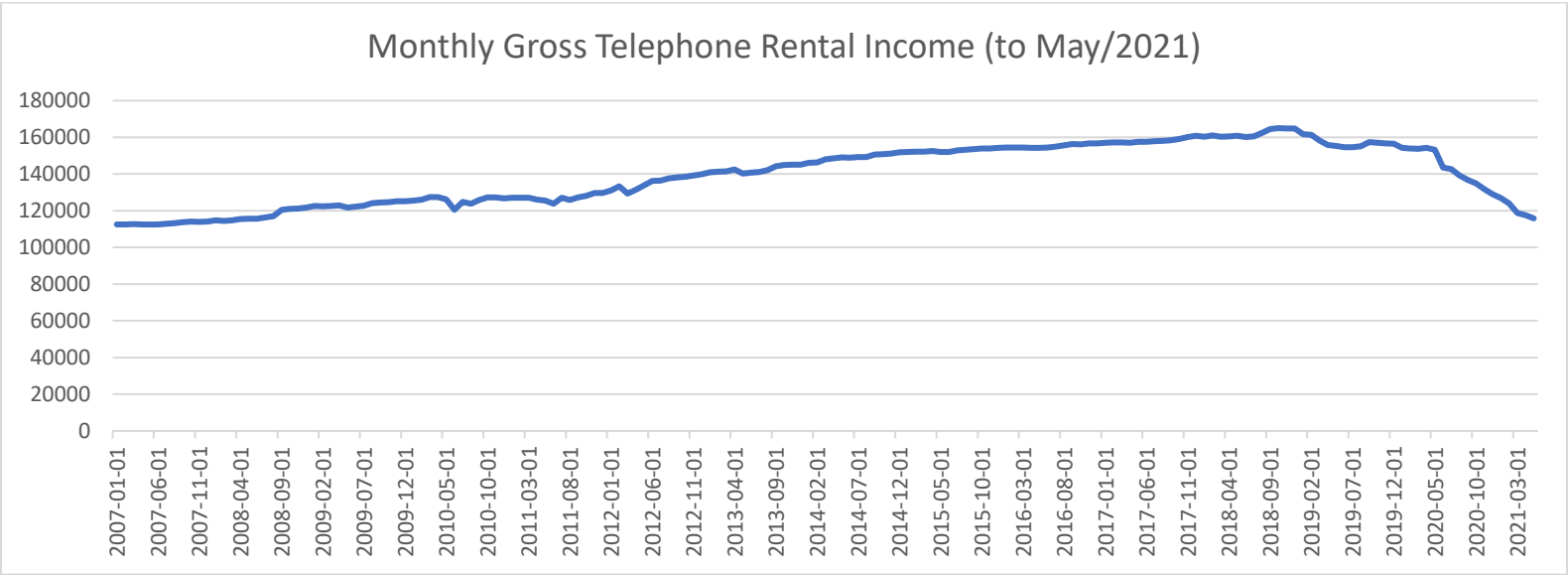
With this support:

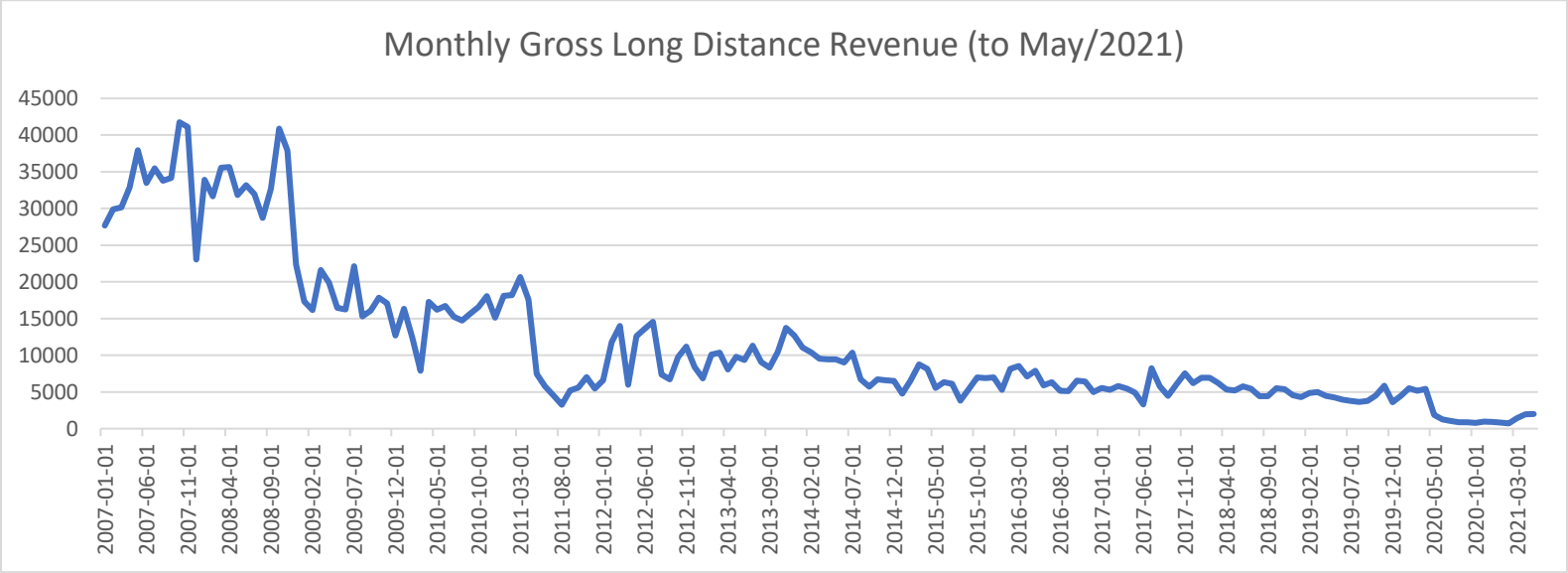
- IST will work with financial stakeholders including the Provost's Office, Finance, UCIST, Faculty Executive Officers, Faculty Financial Officers, leadership stakeholders from Ancillaries and AFIW, Executive Council members as needed, to refine the financial elements of the plan, with a goal of eliminating telephone rental charges by May 1, 2022.
- IST will work with information technology leadership stakeholders including UCIST, CTSC, to refine the technology elements of the plan, with a goal of moving the campus to a primarily softphone model.

IST is offering the S4B softphone only service for $8 per month effective June 1, 2020 and will work with departments to migrate their telephones to S4B softphones, on a request basis.

Appendix A - Historical Revenue and Previous Changes

IST has previously made some downward pricing changes on telephone services. In 2010, the monthly rental on the 1140E IP phone was reduced from $24.75 to $19.95, in 2017 the S4B desk phone was offered for $15.50. In 2011 IST removed the historical mark up on long distance https://bulletin.uwaterloo.ca/2011/jun/22we.html which reduced long distance gross revenue from a high of $400,000 annually to about $100,000 at the time (matching costs such that net revenue from long distance became $0 since that time).





Appendix B – Operating Costs Funded by Telephone Income

IST receives approximately $1.8M in non salary operating budget (excluding campus software), and has about $3.2M in non salary expenses against that budget. This is a $1.4M shortfall. Some of the costs within that $3.4M are costs to operate the IST department (e.g. professional development, memberships (e.g. CUCCIO), service vehicles, IST software), and some are costs to operate institutional IT services (e.g. external network costs, hardware maintenance, date central equipment renewal, telephone lines).

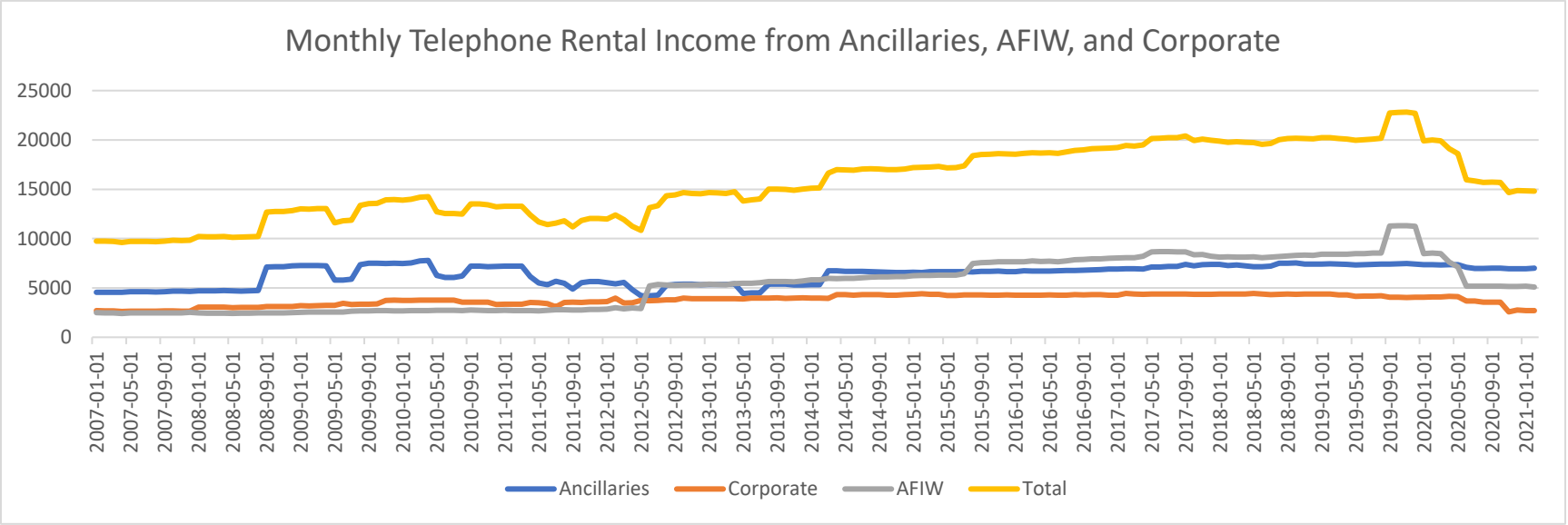
The shortfall has historically been funded by a mix of telecom rental revenue, vacant positions, and/or carry forward from previous years. Below there is a table of what IST proposes are institutional expenses, and IST expenses, that either have no budget, or insufficient budget. A more detailed breakdown will be prepared well in advance of the 2022/2023 budget year start. Based on the below, approximately $1.16M in additional operating budget would be required to fund institutional IT expenses, effective May 1, 2022, if telecom rental charges are eliminated. Based on the below, IST would also need to find approximately $200,000 in cost reductions elsewhere, to fund the insufficiently budgeted IST operating expenses shown.

IST Budget/Expenses exclusive of salaries and campus software

	Budget Available	2020/2021 Planned	Variance
E-Classroom Rollover	700,000.00	700,000.00	0.00
Campus Network Services and Physical Security (net materials)	75,000.00	75,000.00	0.00

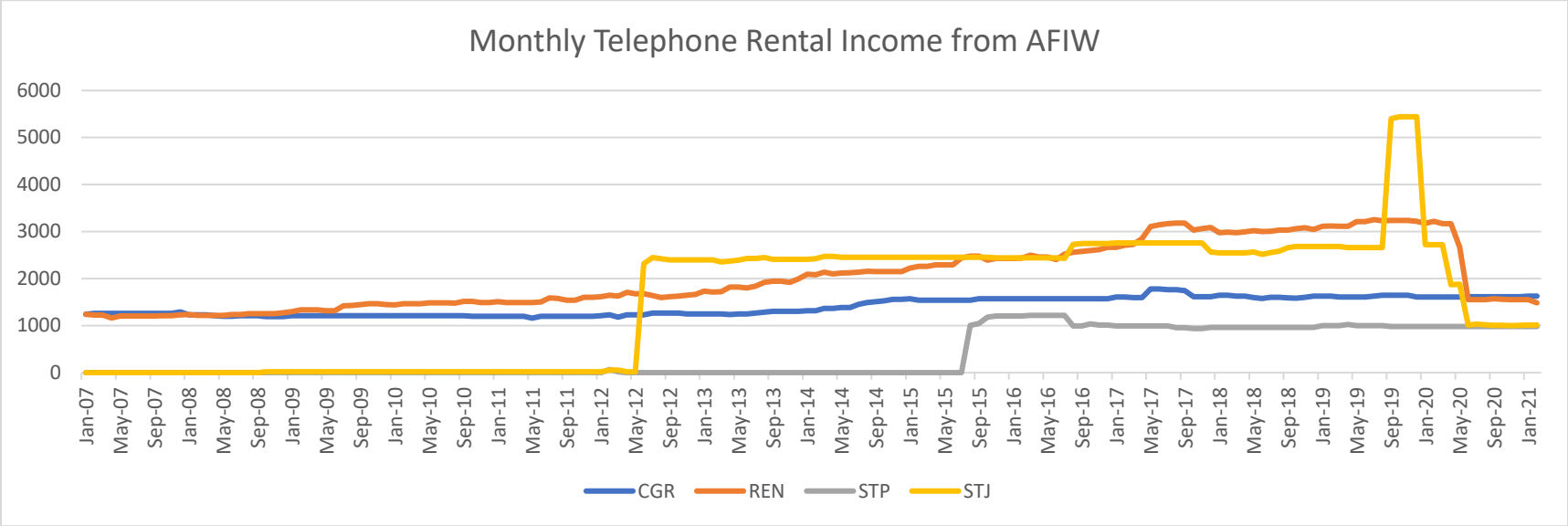
Desktop Rollover	250,000.00	250,000.00	0.00	
Total Campus Expenses within budget	**1,025,000.00**	**1,025,000.00**	**0.00**	
University Telephone Lines (519-885-1211 etc)		180,000.00	-180,000.00	
Media Acquisitions	11,621.00	40,000.00	-28,379.00	
External Networks	324,053.00	400,000.00	-75,947.00	
Equipment Maintenance/Rentals (juniper, cisco smartnet, powerware, telephone system, wifi etc)	270,295.00	450,000.00	-179,705.00	
Data Centre Evergreen (equipment renewal)		450,000.00	-450,000.00	
Computer Equipment, IST Infrastructure	163,315.00	200,000.00	-36,685.00	
Revenue (includes net software sales)	-310,000.00	-105,000.00	-205,000.00	
Total Campus Expenses insufficient budget w/o telecom and/or vacant positions	**459,284.00**	**1,615,000.00**	**-1,155,716.00**	Ask for 2022/2023 to offset loss of telecom (historically funded by telecom and/or vacant positions)
IST Software (includes some campus use software)	181,432.00	75,000.00	106,432.00	
Building Alterations, Furnishings	18,842.00	10,000.00	8,842.00	
Hardware Assurance Group (net materials)	10,000.00	2,500.00	7,500.00	
Memberships and Professional Dues (CUCCIO, Educause, etc)	5,500.00	35,000.00	-29,500.00	
Professional Development	500.00	150,000.00	-149,500.00	
Administrative and other	139,722.00	270,000.00	-130,278.00	
DUO tokens for campus use		25,000.00	-25,000.00	
Total IST expenses insufficient budget w/o telecom and/or vacant positions	**355,996.00**	**567,500.00**	**-211,504.00**	Additional non budgeted expenses
Total Operating	**1,840,280.00**	**3,207,500.00**	**-1,367,220.00**	Total historically funded by telecom and/or vacant positions

Appendix C – Monthly telephone rental income from Ancillaries, AFIW and Corporate clients



Note rental income has been declining since June/2020 as units migrate to Skype for Business, which has a lower monthly rental than conventional phones ($8 vs $19)

Appendix D – Monthly Telephone Rental Income from AFIW



Note rental income has been declining since June/2020 as units migrate to Skype for Business, which has a lower monthly rental than conventional phones ($8 vs $19)

Appendix E – December 3, 1996 Daily Bulletin article

Replacing UW's telephones

Pretty much everybody on campus will get a new telephone between now and 1998, says an announcement from Jay Black, the associate provost (information systems and technology). UW is taking "the first steps in a multi-year project to renew our telephone services infrastructure", said his announcement:

The project will be financed from the current Telephone Services budget, including a cash reserve accumulated over the last two years. The motivation for the project is to reduce telephone maintenance costs by upgrading to new hardware and to replace our telephone switch and handsets so that we may take advantage of current and future changes in telephony. . . .

The first phase, beginning immediately, will involve an upgrade of our central telephone switch to current hardware and software levels. (As with most computer "upgrades", this is essentially a replacement of a twelve year old computer with a new one running current software.) This simultaneously permits us to upgrade the connection between our switch (or PBX, "Private Branch Exchange") and the Bell network to a digital connection from an analog one. As adjuncts to this first phase, we will be purchasing several hundred new digital telephones, as well as the on-campus telephone cabling and old telephones for their residual value. . . .

Until now, Bell has owned the cables and phones all over campus. "We will now become the owners of the cable," explains Bruce Uttley of IST, "so that we can stop paying monthly maintenance costs to Bell. And that will mean that we are responsible for the care and feeding of the cable plant. It is the same story with the old telephones."

Black's announcement continues:

The second phase, scheduled for early in the 1997-98 fiscal year, will replace about half of the remaining telephones with new digital telephones and associated digital equipment attached to the PBX. Phase 3, scheduled for early in the 1998-99 fiscal year, will replace the remaining telephones with new digital sets. The timing and details of phases 2 and 3 are uncertain, but my current expectation is that we will complete the replacement some time in 1998. Current internal costs for telephone services will not change. . . .

Telephone sets on campus will be replaced based on the order of the associated line cards in the PBX cabinets. Telephone sets are purposely connected in a random fashion to these line cards so that a hardware failure will not affect all the phones in one area. As a result it will appear that there is no rational plan behind the conversion of telephone sets in offices and rooms around campus. If necessary, we will modify the order of installation as different priorities become evident.

December 19, 1996, will be the last day for changes to the old phone system: "No moves, adds or changes to extensions or phones will be made until after the cutover date of January 24, 1997." On January 24, which is a Friday, there will be no phone service at all for one to four hours as the new PBX is plugged in, along with new digital connections to the Bell network. "If necessary, problem resolution will continue throughout the weekend." Then on January 31, there will be an "upgrade" to the voice-mail system.

Says Black: "All new telephones will be multi-line sets with message waiting lights and at least 8 buttons, at the same cost as current Link or Unity sets. . . . As individual lines are converted, we will be contacting the departments involved to decide on options and features for each extension."

Appendix F - Rental Income from Ancillaries, AFIW, and Corporate clients

As discussed in financial information above, the majority of telephone rental income represents historical and unnecessary internal budget transfers. Moving money from the centre, to the faculties, and then to IST (and some paid back to the centre), does not provide value, but creates confusion and additional work, and hinders transparency.

While the majority of the approximately $1.8M annual telephone rental income does not provide value, approximately $250,000[1] annually (2019/2020 fiscal year) from Ancillaries, AFIW, and Corporate clients is somewhat more complicated.

If telephone rental charges are eliminated, as proposed, the net budget impact to the centre, IST, Faculties, and ASUs, can be made zero, relatively easily.

In contrast, the loss of telephone rental income from Ancillaries, AFIW, and Corporate clients would result in an actual loss of university operating budget.

Before considering how to make up for this lost budget, it is appropriate to note that the university likely should have never relied on telephone rental income from Ancillaries, AFIW, and Corporate clients, to fund activities not related to telephony. Prior to 1996, the Ancillaries, AFIW, and Corporate clients were essentially paying Bell for phone service (via IST). When the university insourced telephone service, and lowered telephone operating costs below the rental income, the savings were not passed on.

It could be argued that the Ancillaries, AFIW, and Corporate clients still receive good value for money, the rental income does pay for other central services, some used by these groups. However, prior to 2012 (for St. Jerome's) and 2015 (for St. Paul's), these two AFIW operated their own telephone services, and did

not pay telephone rental charges to UW, yet would have received the same set of non telephone related services that other areas were subsidizing through telephone rental charges.

Of course there is no way to reconcile this today, the most appropriate course of action is to determine a reasonable approach going forward, and not attempt to model ongoing charges based on historical decisions.

The Ancillaries and AFIW pay overhead to UW, and corporate clients (e.g. dentist's office, CIBC) pay rent. IST provides a suite of IT services to ancillaries and AFIW that are presumably covered through the existing overhead. The overhead fees could be adjusted slightly upwards to make up for the loss of telephone rental income. The rent to corporate clients could be increased slightly to cover the cost of telephone service (or some could obtain telephone service directly from Bell).

The easiest path may be to not do anything and absorb the $250,000[1] annually that would be lost from telephone rentals to Ancillaries, AFIW, and Corporate clients. Adjusting the overhead fees, and rental agreements, solely to replace telephone rental income, may not be worth the effort. It may help to note that UW received decades of income from these areas that exceeded the cost to operate the telephone service. If, at a later time, there is a need to adjust overhead fees and rents, for other reasons, adjustments could be made at that time, taking into account the full suite of services provided and their costs.

[1] – *The $250,000 annual telephone rental income from Ancillaries, AFIW, and Corporate clients is based on the 2019/2020 fiscal year. As units migrate to Skype for Business, this amount is reducing, due to the lower monthly rental charge for Skype for Business compared to conventional phones ($8 vs $19). For the month of February/2021, the rental income from Ancillaries, AFIW, and Corporate clients was $14,811.65, which would be approximately $180,000 annually. Additional migrations to Skype for Business are expected, so the amount is expected to continue to reduce over time.*